A Lecture
ON
ABIOTROPHY.

Delivered at the National Hospital for the Paralysed and Epileptic, Queen-square, Bloomsbury, on Feb. 21st, 1902,

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GENTLEMEN,—Life presents to us a double aspect and so therefore does death. One is its somatic character, the life of the organism as a whole, to which the words "life" and "death" are chiefly applied. Somatic life depends essentially upon the blood, as the familiar words assert, words uttered and written long centuries ago—"the blood which is the life thereof." It depends on the proper constitution of the blood, deficiency or perversion of which will end life speedily or slowly. It depends on the due reception of oxygen by the blood through the lungs. And it depends also, and most of all, on the due movement of the blood by the heart; if the heart is stilled, life ends almost instantly. But besides this general life, the termination of which involves that of every part of the body, many of these parts have their own vitality. Some of them may slowly die, while the life of all the rest goes on without impairment. They may die from many causes, some early, inevitably, from a grave defect of vital endurance; some much later, the failure being only slightly premature; and some at various times, apparently from various causes. When the failure is early it is often due only to a defect in vitality, a defect which seems to be inherent, the tendency thereto inborn. We do not, indeed, apply the word "death" to this slow decay of the elements; we speak of it as "degeneration," but the process is in many cases, perhaps in most, an essential failure of vitality and I think it is instructive to consider the degenerations in this aspect. But in doing so I am met by the difficulty that we have no word by which to designate this conception—a degeneration or decay in consequence of a defect of vital endurance.[1] I do not like new words—indeed, I dislike them—but if we have a conception for which no name exists which we need frequently to speak of it is not wise, I think, to shrink from an attempt to give it a name. Here the simplest mode of obtaining what we need is to insert the root of *βιος* after the negative particle in "atrophy" which gives us "abiotrophy." But it is generally better, if you can, to appropriate what you need than to make it afresh, and we find the word *βιοτροφον* used in the sense of "vital nutrition."[2] If we prefix the negative particle we have the same word, "abiotrophy." If a more general term is desired the adjective "biotic" has been occasionally used in English[3] in the sense of vital, and from this we may form "abiotic" to designate that which depends on defective vitality. A corresponding substantive would be "abiosis," and this also has some warrant. The word *βιωσις* was employed once or twice in old Greek, meaning "mode of life." It is given us by the physician who is more widely known and esteemed on account of the character and precision of his writings and the devotion of his life than any other medical man who has lived—St. Luke. It is pleasant, I think, to take a word from him.[4] So I give you a choice of words by which to designate this unnamed conception.

In most gatherings of men we may see an illustration of abiotrophy. We may perceive an illustration of the failure of the life of the hair follicles of the scalp which must be the essential cause of early baldness. We are so familiar with the condition that we do not always perceive the lessons it may teach us. In many men most of the hair follicles die soon after adult life is reached—die beyond the power of restoration. Some, however, persist; around the circumference is a zone in which vitality is retained; elsewhere the failure is absolute and uniform. It is certainly often hereditary, father and son—indeed, also grandfather and grandson—may become bald between the ages of 20 and 30 years. The decay is practically limited to the male sex. In other persons and families failure of vitality in the follicles occurs later and is less extensive. In others, again, a luxuriant growth of hair is retained throughout life. I know that baldness has lately been ascribed to seborrhœa, due to organisms, but such a cause, accidental and acquired, fails entirely to account for the more general features of the condition, and, if true, can be only an exciting cause, effective by reason of the failure in vitality.[5]

Without complete degeneration of the follicles they may fail to produce the normal pigment of the hair and early greyness is hardly less common than early baldness. It is not less instructive. It is a qualitative failure, an enduring defect of one function of the follicles. It shows that without the total failure of life part of the work of life may come to an end. That it must be by a chemical process that the pigment is produced I think none can doubt, and that hair may be blanched by a change in the follicular secretion is conclusively shown by the case of one-sided greyness of the beard from meningeal hæmorrhage which I mentioned recently in a lecture on Metallic Poisoning.[6] Regarding the association of greyness and baldness, not only may the imperfection to which greyness is due be extreme without any tendency to loss of hair, but it is said that baldness in early manhood is never preceded by greyness, and seldom in later life. The persistent luxuriance of growth of the hair when the formation of pigment has ceased is a familiar fact. It is also worthy of note that even early greyness is met with in each sex and does not present the tendency to affect males only, which is so conspicuous in premature loss of the hair.

I must not be tempted to delay too long at the surface of the body. But we must not pass at once to the nervous system. Between the surface and the nerve centres we meet with tissues which present very striking and instructive forms of true abiotrophy—the muscles. In the various forms of idiopathic muscular atrophy, in which there is a primary atrophy of the muscular fibres, we have examples of a true abiosis. To all these primary myopathies it has become customary to apply the term "muscular dystrophy," and the custom is convenient, if not quite accurate. The term thus includes both simple muscular atrophy and its well-known congener, pseudo-hypertrophic paralysis. In these the muscular fibres, after full development, cease to maintain their nutrition. They slowly waste and ultimately a large number, most of them in many parts, ultimately perish. The connective tissues between them overgrow by a process we can discuss better in connexion with the nervous system. Its increase may fail to maintain the normal bulk of the muscles, so that these waste conspicuously, sometimes extremely. In other cases this tissue-weed, as we may regard it, presents a more luxuriant development and produces fat-bearing cells which so much increase the bulk of the muscle as to cause the enlargement of "pseudo-hypertrophy."

These great variations in the interstitial process compel us to regard the failure of life in the muscular fibres as the essential element of the disease; it is a defect of vital endurance, truly congenital in so far as the tendency is concerned. Two other facts indicate the same conclusion. The defect in the muscular system may not only be, as it were, qualitative, it may be also quantitative. Certain muscles may be absent, however early the sufferer is examined, especially the lower part of the pectoralis major and the latissimus dorsi, the two muscles which depress the raised arm and are, curiously, the least needed muscles of the body, since gravitation will accomplish in most circumstances that for which they are needed. We have further proof of its

[1] This conception of the degenerations of the nervous system was admirably stated by Dr. F. W. Mott in his Croonian Lectures for 1900. But it formed the subject of an unpublished lecture which I gave in 1897 or 1898 and is epitomised, in its essential features, in some remarks which I made at a discussion on tabes at a meeting of the Pathological Society of London on Dec. 5th, 1899, reported in THE LANCET of Dec. 9th, 1899, p. 1591.

[2] Not indeed in classical Greek; it is quoted by Stephanus from Gorgias Pisides, a Byzantine writer of the seventh century (620 A.D.).

[3] First in 1600. Dr. W. B. Carpenter added a second adjectival termination and made it "biotical." It exists in French as *biotique*, from the Latin *bioticus*, and the Greek *βιοτικος*, from *βιοτος*, and *αβιοτος* had the sense of "lifeless." Thus, "abiotic" is clearly legitimate.

[4] The word, previously used in the Septuagint, comes to us through the author of the Acts of the Apostles, but may have been used by St. Paul since it occurs in his speech before Agrippa.

[5] In curious contrast to the seborrhœal theory is the conclusion of one German writer that early baldness is the result of the habit of daily washing the head.

[6] THE LANCET, Nov. 2nd, 1901, p. 1173.

dependence on a congenital tendency in its occurrence in several members of the same family and chiefly in the males, the girls, who do not suffer, conveying the morbid tendency to their own sons. Girls, indeed, may suffer, but less frequently in affected families than in the isolated cases which we sometimes meet with. Remember that all hereditary and family diseases sometimes arise *de novo*. I shall have to return to the point again, for it is important.

We saw the special tendency of males to suffer from baldness, we shall see the tendency also in the affections of the nervous system; its manifestation in pseudo-hypertrophic paralysis is striking, even more so, I think, than in simple idiopathic atrophy. You may have heard of the group of cases through which Dr. Meryon first made the disease known in this country. Four boys, all the sons in one family, died from it; the girls were unaffected. But I know that one of these has two sons, and both are affected in an extreme degree. Her daughters are quite well. I could give you other examples which have come under my own observation which are equally marked, but the fact is too well known to need further illustration. I will only remind you, before passing from these muscular maladies, of the unequal way in which the muscles suffer. The distribution of the affection is strikingly different from that of those atrophies which depend upon the nervous system, but its localisation should be remembered, and especially that the muscles of the extremities, the hands and feet, suffer least.

Let us pass to the degenerations of the nervous system. In all those with which we are concerned to-day there is a slow decay of the nerve elements which have a common function—a decay limited to these but extending through their entire extent. Our modern conceptions lead us to regard these functional tracts as nutritional entities and to term them neurons. Each depends for vitality on the cell from which the fibres proceed—a chief process ending in a long fibre and short processes quickly branching in the spongy grey matter. We have long recognised this relation to the cell but the change in our conception has come, as you know, from the perception of discontinuity. The division of the fibres (which is really the separation of their constituent fibrillæ) terminates in ultimate branches which seem to end but end in contiguity to others from which they are stimulated. The groups of neurons which are differentiated in function differ also in their tendency to decay—in their vitality. When this occurs slowly it seems to be the result of a slow failure of the influence of the cell on which their vitality depends and the indications of the decay are first seen in the parts which are furthest from the cell—in the extremities of the fibres. But these neurons differ not only in the duration of life but also in its beginning. Not only do they often die at different times but they differ in the time of their development. Some are structurally complete sooner than others and thus are distinguishable in the beginning of life as well as in its ending.

Before we consider the special forms of the slow failure of these neurons, the forms of neuronic abiotrophy, there is another feature of the process of decay which it is important to discern. Whenever the nerve elements waste there is always an overgrowth of the interstitial neuroglia, the connecting and supporting tissue which lies between them. This overgrowth may be, indeed, on first inspection, the most conspicuous element, and its aspect has led the process to be termed "sclerosis." I say "its aspect," because there is generally no increase of consistence in the part so changed. This is generally diminished; the interstitial tissue, which looks so fibrous and firm under the microscope, is really softer than the nerve elements which have perished. This overgrowth has certain features which it is important to recognise. They have special significance in connexion with conditions which we shall presently consider. The neuroglia is a residue of the embryonal tissue from which the nerve elements also develop. When there is local arrest of development of the latter, as in cases of congenital fissures and cavities in the spinal cord, the embryonal tissue remains in tracts adjacent. The two elements, the neural and interstitial, seem to have a common inverse vitality and it is in consequence of this that the interstitial tissue overgrows when the nerve elements decay. When the overgrowth is thus started it often proceeds with an independent energy, in consequence of which it may overstep the strict limits of the degeneration and pass a little into adjacent tracts. It is especially luxuriant where this tissue is naturally most abundant, about the vessels and at the surface of the spinal cord, e.g., beneath the pia mater which may thus be thickened. On account of this the nature of the process was for a long time misunderstood. The significance of the long extent of the degeneration, throughout the whole of a single tract of nerve fibres, did not receive its due weight, at any rate from many workers, as an indication that the degeneration of the nerve elements was the primary process. Attention was fixed upon the conspicuous interstitial tissue, and the characters of this were thought to be evidence that it was the primary change and that it started from the vessels or from the membrane. The word "sclerosis" itself made the mistake easier, because there are some morbid processes in which this element *is* the primary one, as in disseminated sclerosis, and a similar change may result from local inflammation. For these reasons the degeneration of the motor tract in the lateral columns of the cord was, and still is, spoken of as "lateral sclerosis" and degeneration of the fibres in the posterior columns is called "posterior sclerosis." I may add that we have another illustration of the tendency to independent growth of this tissue in the fact that the residual tracts which persist when the development of the cord is arrested may take on a new process of growth at some period, usually in early adult life, so as to give rise to that which seems a definite new formation, the condition termed "gliomatosis."

Not only is the secondary overgrowth thus excessive in degree but it sometimes assumes an energy which entails some vascular disturbance, as active tissue-growth is always apt to do. This may even be such as to constitute a process of an inflammatory character and it may even, in rare cases, be attended by hæmorrhage. There may result from this a rapid or even sudden increase in the symptoms not otherwise to be explained. Let me give you an instance. The optic nerve is a structure in which the amount of interstitial tissue which is formed in primary degeneration is exceptionally large. It is so in the simple atrophy of tabes. In this we sometimes have evidence that the interference with function is especially great at the optic commissure, so as to cause temporal hemianopia—an indication that focal damage is added to the primary atrophy. We can understand this if the secondary change assumes at the commissure an inflammatory degree. This is also indicated by the fact that such temporal hemianopia may develop rapidly. Moreover, I have seen one case of the kind, and another has been recorded, in which, when such hemianopia had developed, it progressed to complete loss in one eye and then the remaining half field was suddenly lost, causing sudden complete blindness, as if the vascular disturbance of the secondary process had led to a hæmorrhage at its chief seat. We shall presently see the importance of these considerations.

Let us pass to the special forms of degeneration of the nervous system which seem to be abiotic. We may distinguish certain groups, to which I referred at the outset. The first consists of those in which the failure of vitality occurs before or soon after adult life is attained, and it may be even earlier, soon after structural development is complete. In most cases of this group the relation to an innate tendency is shown by their frequent occurrence in several members of the same family, in several brothers or sisters, and sometimes by their occurrence in more than one generation. But each form, even those in which a family grouping is most marked, may occur in isolation.

The natural transition from the muscular to the nervous system is by the fibres which end upon the muscles, the spinal motor neurons, whose vital centre is the cell of the anterior grey matter of the spinal cord. Note this: different as they are in aspect, of all structures the muscular fibres are nearest to the nerves. The muscular fibre is excited to instant contraction by the stimulus that reaches the extremity of the nerve fibre, which ends in contiguity to the muscle protoplasm, although the two are not continuous. So also the nerve impulse which stimulates the muscle arises, we now conceive, in the extremities of the branching processes of the cell, as the result of an impulse that reaches the ends of other fibres which are contiguous but not continuous. Remember, also, that the life of the muscle depends upon that of the nerve. Slow atrophy of the muscle follows the slow degeneration of the nerve. Perhaps I should rather say the "gentle atrophy" of the nerve, for a reason you will see in a moment. The atrophy might be thought to be due only to disuse, were it not for the change in electrical excitability which so soon presents itself and which you know quite well—the "reaction of degeneration." But if

the degeneration of the nerve is of rapid, and not only of rapid but of irritative, character the muscular fibres undergo a similar change, a more irritative degeneration, a quick destruction, with granular and fatty degeneration and a rapid disappearance of all electrical excitability. These facts indicate a close vital relation between the muscular and nervous structures—a relation it is well to remember.

Of the many forms of abiotrophy in the nervous system, perhaps the most striking is one of which these spinal motor neurons are the seat. It is rare but it has been observed many times.[7] It commences soon after they have attained structural completion, about the end of the first year of life, and progresses so rapidly as to cause almost universal paralysis and death at the end of the fifth or sixth year. It occurs in families as well as in isolated cases and in both sexes, and is thus clearly due to a congenital defect of vital endurance. After death there is found almost complete degeneration of the motor cells of the spinal cord, with very little change in the white columns, total degeneration of the anterior roots and of the motor fibres down to the muscles, and extreme degeneration of these. It has, indeed, been conjectured that both the motor neurons and the muscles suffer simultaneously; whether it is so or not we cannot say, for the affection of the motor neurons is sufficient to account for the muscular changes. It is quite certain that the degeneration of the motor nerves is not a consequence of the muscular atrophy. In extreme idiopathic muscular atrophy the nerves may be unaffected. A striking proof of this is afforded by a case which was observed by Duchenne and published by him when the patient was nine years old; it was afterwards observed and described when the patient was 28 years old by Landouzy and Déjérine. The patient died when he was 36 years old, but the thorough pathological examination that was made has only lately been published.[8] In spite of extreme degeneration of a large number of muscles of limbs, trunk, face, and neck the motor-nerves and spinal motor-cells were absolutely normal.

But this abiotic infantile atrophy presents one remarkable feature: the affection begins in the muscles of the hip and thigh and trunk, and thence extends, reaching last the extremities of the limbs, which suffer first in the ordinary form of spinal atrophy. It is a feature presented both by muscular abiotrophy and by this remarkable neuronic form. Such common features are noteworthy as links between the muscular and nervous systems. A similar form of neuronic atrophy is occasionally met with in families in later childhood and early adult life; the later the onset the greater the resemblance to the common type. In some forms the cerebral motor neuron also suffers, the upper segment of the motor tract, as it does in the atrophies of later life. The isolated decay of this cerebral motor neuron is also met with in early adult life as an abiotic degeneration of the lateral columns—the pyramidal tracts. It is manifested by spastic paraplegia, coming on often without any exciting influence and sometimes in several members of the same family.[9] Occasionally the malady has followed some influence, such as an acute disease, which would depress the nutritional vigour of the whole nervous system but has an enduring effect only on structures whose vitality is defective and might soon fail without this influence.

I have here to show you an example of such abiotic spastic paraplegia. It is the more instructive because it is isolated; such sporadic cases are far from rare. Their nature is often not discerned, because it is not suggested as it is when other members of the family suffer. The patient is 20 years of age and his symptoms commenced gradually about three years ago without any cause to which they can be attributed. There is no suspicion of inherited or acquired specific disease. He has weakness of the legs, with some spasm, excessive knee-jerk and foot-clonus, with no change in sensibility or girdle pain. He has also some unsteadiness, suggestive of slight failure of the posterior columns. The abiotic nature of the case is confirmed by the fact that another system of fibres is also failing. He has atrophy of the optic nerves which also has developed gradually and which presents the aspect of simple atrophy. The simultaneous occurrence of such degeneration in two neuronic systems at this period of life leaves no doubt of its nature.

The optic nerves frequently suffer from abiotic wasting. Many groups of cases are on record in which several members of the same family have become blind, usually between the ages of 15 and 25 years, from a slow failure of the nerve fibres, progressive in spite of treatment. A full account of these cases has been given by Dr. S. H. Habershon.[10] This progressive course places their essential nature beyond doubt; yet it is obscured by the fact that the early stage has very often been accompanied by symptoms of retro-ocular neuritis with even slight signs of it in the disc. There has often been a central scotoma indicative of an "axial neuritis." The change, moreover, has often been preceded by a cause believed to be capable of inducing neuritis, especially tobacco-smoking, or in the case of women by some acute disease. We may understand this fact better, I think, if we remember what I said just now regarding the independent energy of the interstitial overgrowth when it has been set up by degeneration of the nerve elements. Remember, also, the great amount of interstitial tissue which is formed in the optic nerves even in primary tabetic atrophy. Tobacco amblyopia is apparently due to an axial neuritis, and this gradually ceases and its effects pass away when the cause ceases to act. But the loss of sight, in the case I am now speaking of, goes on steadily increasing after tobacco has been given up. It goes on as by a progressive atrophy of the nerve elements, not by an increase of the signs of neuritis, showing that the toxic agent was only the exciting cause of the process really due to an inherent defect of vitality. In those who are not smokers the toxin of an acute disease seems sometimes to have acted also as an excitant. We know that that of scarlet fever may cause pronounced neuritis. The difficulty is to understand that optic abiotrophy, wasting of the nerve-fibres from defect of vital endurance, should apparently begin by interstitial inflammation. Let me remind you of what I have just said regarding this interstitial process. Secondary as it seems it may be simultaneous in a very absolute manner. There seems to be a solidarity in the nutritional energy of the two tissue elements, the neural and neuroglial, and the tendency to overgrowth of the latter may be actually simultaneous with the tendency of the life of the former to cease. The tendencies are in the opposite direction, but they may be coincident results of the same vital condition. If so, we can understand that the trophic tendency of the interstitial tissue may cause it to respond with energy to a toxic influence which can act upon it and that thus retro-ocular neuritis the effect of a toxic agent may concur with the very commencement of the abiotic wasting of the nerve elements, and that its special symptoms may even seem to lead the way.

It is not a little curious that in the patient before you, with abiotic spastic paraplegia and optic atrophy we find indications of the same associated process that I have described. As far as its course and the ophthalmoscopic appearances are concerned it seems to be a primary simple atrophy of the optic nerve. His acuity of vision is reduced to one-tenth. The fields present a peripheral restriction, but no central defect in the fields for white can be detected, even with a small object. Yet it is different with the colour fields. My clerk, Dr. Finny, finds a well-marked central scotoma for both red and green (see accompanying chart). It is irregular in outline but extends to an average of about 10° from the fixing point and in one eye to 20°. This, of course, led to an inquiry regarding tobacco-smoking and we learned that he had been accustomed to smoke as much as half an ounce of shag tobacco a day. Thus this case agrees with those of isolated optic abiotrophy which I have mentioned in presenting slight symptoms of axial neuritis and in the fact of this exciting cause. But it presents the progressive tendency and also the peripheral restriction of the field and the aspect of disc met with in ordinary atrophy, while its abiotic nature is shown also by the coincident affection of the cerebro-spinal motor neurons. The spinal symptoms in this patient, the spastic palsy and unsteadiness due to atrophy of these neurons and those which conduct to the cerebellum, are such as often form part of the best known abiotrophy, Friedreich's disease, the so-called "hereditary ataxy." The latter name is

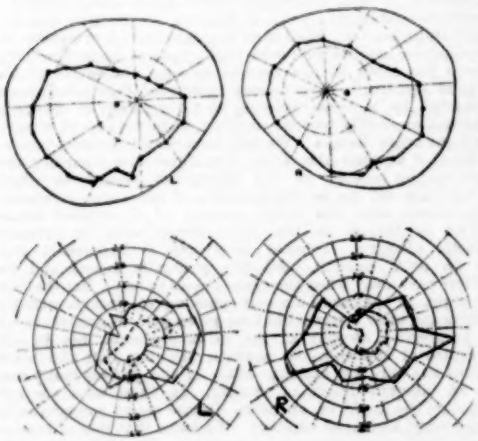
[7] See especially Hoffmann: Deutsche Zeitschrift für Nervenheilkunde, Band 18. 1900; ibid., vol. xx.; Cramer: Centralblatt für Allgemeine Pathologie, 1895; Senator: Charité-Annalen, xxvi. Jahrgang, &c.

[8] Spiller: Cont. Pepper Lab., Philadelphia, 1900.

[9] See, for instance, the cases recorded by Dr. Howard H. Tooth: St. Bartholomew's Hospital Reports, vol. xxv.; Strumpell: Neurologisches Centralblatt, 1901, p. 622; Krafft-Ebing: Deutsche Zeitschrift für Neurologie, 1900; and Finzi: Rivista Sper. di Fen., xxiii.

[10] Transactions of the Ophthalmological Society of the United Kingdom, 1888, p. 190, where references to the chief writings on the subject will be found.

another instance of inaccurate terminology, because the evidence of heredity is not so common as is the affection of collaterals, of brothers and sisters. This "family" feature is clear proof of the congenital nature of the tendency to vital failure which the disease manifests. It is really ataxic paraplegia depending upon slow changes in the posterior and lateral columns but associated with other symptoms in speech, &c. In this malady the abiotic



Fields of vision. The upper for white, the lower the central region for red (continuous line) and green (broken line).

tendency is clearly congenital. Males suffer more frequently than do females, but not in the same degree as in some other analogous maladies.

Friedreich's disease was the first of the kind to be distinguished and is the best known, but the attention which has been given to it has revealed the wide variation in the precise characters presented by cases which cannot well be separated from typical forms. The characteristic weakness, the weakness and unsteadiness of the legs, sometimes ataxy of the arms, the change in speech and nystagmus, are often found to be associated with some impairment of sensation, and with either loss or with excess of the knee-jerk; the condition of speech also is found to vary and there may or may not be mental alteration. The cases pass by degrees into another group which has been thought to be distinct. In this the most conspicuous feature is the swaying disturbance of equilibrium when standing, with or without evident weakness of the legs; there may be loss or excess of the knee-jerk but there is seldom any disturbance of cutaneous sensibility. The arms may present any form of incoördination or none. Speech is commonly altered, slow and monotonous, sometimes with confluent articulation, sometimes with a staccato utterance. There is almost always nystagmus and mental change is more often marked than in Friedreich's disease. The difference in other symptoms is generally one of degree only and depends on the age at which symptoms come on. This is chiefly during the second half of actual childhood. Resemblance of the symptoms to those of disease of the cerebellum has caused the malady to be called by the inexact and clumsy name "heredo-cerebellar ataxy." Although heredity has been found in a few cases merely a family association has been commonly met with. Disease in the lateral columns has been found but changes are greatest in the posterior columns and the direct cerebellar tract, which seem to convey afferent impulses to the cerebellum; their defect deranges its coördination of impulses to guide the cerebral motor centres. Affections of these upbearing fibres, conveying impressions from the muscles, seem thus to cause this peculiar "cerebellar" ataxy, as distinguished from the pure incoördination of the legs met with when the inbearing fibres to the cord degenerate, as in ordinary tabes. All the facts regarding the disease show that it is a true abiotrophy, a degeneration of certain neurons from defect of vital power, but the precise distribution of the defect varies in different cases. Probably many of the neurons in the brain which connect different parts and associate and harmonise their functions also waste, and thus the mental change may be explained. But the special pathology of this affection is beyond my present subject.

Before I leave this group of abiotrophies, those of earlier life, it may be well to point out that not all the morbid states which seem congenital are really such. Caution is especially needful in the case of the diplegias which date from birth, because they are so frequently due to meningeal hæmorrhage during a tedious or instrumental labour. The narrow pelvis which causes this in one child may have the same effect on another and thus we may have the semblance of a family affection by that which is purely acquired. The birth damage tends to improve as time goes on, abiotrophies tend to increase, but when slight in degree they may seem sometimes to become stationary. The varying course observed in both muscular and nerve affections makes it probable that the degree and extent of the deficient vital endurance may vary much in different cases with corresponding variations in the extent and character of the symptoms that it causes.

The second group of degenerations are those which occur at the other end of life. While general life still seems full of vigour the nutrition of some neurons fails; they slowly die. The neurons which most frequently thus decay are the spinal motor neurons—those which sometimes fail, as we have seen, at the very beginning of life. According to the position of the tracts which suffer first and most the effect is the symptoms of spinal progressive muscular atrophy or of labio-glossal paralysis. These are more frequent in late life than isolated degeneration of the upper, cerebral, motor neuron which causes spastic paralysis, although this does sometimes suffer alone and almost always together with the lower neuron in the ordinary atrophic cases. These maladies often come on without any apparent cause simply because the term of life for those structures is reached and they decay in a true abiotrophy. When any exciting cause can be traced it is usually one which is alone inadequate—some general depressing influence, such as anxiety or grief, which must act equally on all the other structures and tissues, reducing the vital energy of all. But vitality only fails in those which have inherently a less degree; their defect is sufficient to make the reduction in these, though the same as in the others, relatively greater, sufficient to end their life. Without this influence they might or might not have persisted to the end of general life. The apparent cause does not lessen the significance of the facts which show these affections to be essentially senile abiotrophy.

Mental change, especially simple mental failure, also often occurs under the same conditions and no doubt from a slow degeneration of cerebral neurons which connect and combine others in a way we cannot yet perceive. Another senile malady, paralysis agitans, must be referred to vital failure in some cerebral motor structure. It is a striking example in its conditions and course of a cerebral abiotrophy. In spite of its obvious seat in motor structures, in spite of its strongly progressive character, it seems never to entail the decay of the motor neurons which connect the brain, the spinal cord, and the muscles. It formerly seemed to me like a degeneration peculiar in kind, such as we are reminded of by that which causes the hair to become white from lack of pigment though growth is still luxuriant and presents a contrast with the degeneration which causes baldness. But the recent discoveries compel us to look to the extremities of the branching processes of the motor cells, the dendrites which pass into the spongy grey substance, for the source of the motor impulses which the fibres conduct that pass through the nerve-cells without interruption. A change in their nutrition may disorder function yet leave the vital cell and the nutrition of the neuron as a whole unaffected. It is also conceivable that there may be a change in the relation of the dendrite endings to those which stimulate them and induce the motor impulses. We know too little to be able to form an adequate hypothesis. But paralysis agitans generally occurs without any adequate cause and must be regarded as a pure effect of a special defect in vitality—as a form of abiosis. Its occasional occurrence, even in extreme form, in middle life, also without discernible cause, is consistent with this view, for the same is true of other senile maladies.

A third group remains, a large and important class of degenerations the precise nature of which we cannot discern. They are the varied degenerations that occur,

especially in middle life, as the result of some definite cause. It is not clear how far these are due to induced defect of life. The degeneration may be the result of the presence in the blood of some material which is able to enter into the constitution of the nerve elements but is not adequate for their proper functional or structural maintenance. They may slowly recover if the supply of the noxious matter ceases. Arsenical neuritis is an example. Arsenic seems capable of taking the place of phosphorus in metabolic changes of nutrition but its presence deranges function and also structure, so that degenerative change is the result. The alteration begins where vitality is weakest, at the extremities of the nerves furthest from the nutritional centre, the cell; the energy of this may ultimately be impaired, but we have not evidence that the primary influence is exerted on this or that the process consists essentially in a failure of vital energy, that it is a true abiotrophy. The same statements may be made with regard to alcoholic neuritis, since the same process occurs in this.

The most common neuronic degeneration of the middle period of life is tabes. This, as you know, must be ascribed to the influence of a post-syphilitic toxin. But it occurs so long after the primary disease and at such a variable interval of years that the question arises—Is the affection of the nerve elements due to the constant presence of the toxin in the system in varying quantity and varying degree of toxic power, or has a transient toxin an influence in reducing future vital endurance? In the latter case it may be regarded as acquired abiotrophy. Each hypothesis has difficulties, but neither is quite inconceivable. On the whole, I think the first is that which best explains the facts of the disease. The analogous toxin of which we know most—that which causes diphtheritic paralysis—has been proved by Professor Sidney Martin to be due to a change in the chemical constitution of albuminoses caused by a ferment-like material which the organisms in the throat produce. The toxin varies in its character, to judge by its different effects, and it is noteworthy that it may sometimes act on the same neurons as are affected in locomotor ataxy and give rise to the same symptoms. It is conceivable that such a change in the chemical constitution of albuminous substances once set up may continue and the toxin may be constantly produced in varying amount and varying toxic power, its formation being modified from time to time by other influences of which we know nothing. In the processes concerned in the production of excess of sugar we have an example of the persistence of the derangement of a chemical process and its gradual increase if not restrained, and although the analogy is not very close (since sugar is a normal product) it illustrates that such disordered chemical action may be enduring. The occasional rapid increase in the symptoms of tabes, such as may bring a patient from a stationary slight degree to the most extreme disability in a few days, is better explained by the sudden production of a poison of greater power than by the sudden reduction of the resistance of structures the vitality of which is impaired. The same conclusion seems suggested by the great improvement which we meet with in some cases. A man came in here about two years ago who had had symptoms of the first stage for some years and then in the course of a few days the ataxy increased to such a degree that he was not able to stand from the extreme incoördination. Retention of urine had developed and cystitis had set up a suppurative orchitis. Yet this patient gradually improved until he could walk without much unsteadiness before he left the hospital and now he can walk well for eight or nine miles. Unfortunately, improvement does not always occur in the case of rapid exacerbation. There is one tabetic process the course of which is more uniformly progressive, so much so, indeed, as to resemble closely the effect of reduced vitality—the atrophy of the optic nerves. But even in this we meet with cases which become arrested, usually as the result of treatment. The significance of this fact we cannot discern or even wisely speculate about. Arrested improvement from treatment occurs in other slow degenerations which occur during the middle period of life; some of them are met with occasionally as the sequelæ of syphilis, but they may occur without obvious cause or as the result of exposure to cold, or they seem to be due to the toxin of some other specific disease. The nature of these also is doubtful. Some of the progressive muscular atrophies of middle life resemble the senile form we have just considered in their slow commencement and gradual extension and increase, and sometimes in the absence of a cause. Yet they differ in being more amenable to treatment. There is a considerable prospect that such cases will be permanently arrested. But even in the cases after syphilis it is not by anti-syphilitic treatment that good is done but by the hypodermic injection of strychnia. In one typical case the malady commenced just after a course of treatment at Aix, but the permanence of the arrest is shown by the fact that it has now been absolute for about 12 years. In another case, more advanced but also arrested, the treatment was commenced after a rapid increase which occurred during the administration of iodide of potassium. This treatment has not the same influence in the senile abiotrophic form.

That terrible malady, general paralysis of the insane, seems, often at least, to be due to the same cause as tabes, symptoms of which are so often associated, and seems to be of the same degenerative nature, produced no doubt in a like way. That which has been said of tabes applies to it also, and that which has been said of the secondary processes may explain the inflammatory changes often met with. But here we are on uncertain ground. Those cases which belong to the type which is recognised as most characteristic seldom fail to go on to death. Here also the pathological relation of the morbid process to its cause is quite obscure.

Just as the simple baldness which develops in early manhood may also come on at any period in adult life and in any degree, so the family abiotrophies which usually commence early in adult life or in childhood may show themselves later. In the families in which some members suffer early, in other members the same symptoms may occur only during middle life—a fact which we can understand by the conception that the degree of vital energy in such cases is greater, the vital endurance is such as to persist longer. Yet the occurrence of both in the same family shows that their nature is the same and that the difference is one of degree.

These conceptions I hope may help you, if not to understand these processes, at least to think of them more clearly. I would especially impress upon you the fact which is illustrated by the lad whom I have shown you—the sporadic occurrence of these abiotrophic diseases. Their nature is easily discerned when they occur in groups which have the tie of consanguinity but the discernment is less easy when the disease occurs in isolated form. Remember the significance in such cases of the age of the patient, the slow development of the malady, the absence of adequate cause whether an inadequate cause can or cannot be traced, and the correspondence of the symptoms to the functions of certain sets of neurons. Many cases of this kind are regarded as due to disseminated insular sclerosis, often assumed to exist when the symptoms afford no justification for the opinion and in cases in which the future course of the case negatives it. It was, indeed, written at the head of the notes of this case before I saw the patient. Remember that the symptoms of systematic degeneration are not alone ground for the diagnosis of insular sclerosis nor is the additional presence of nystagmus. Nystagmus on movement of the eyes is met with in many spinal degenerations of pure systemic type, why we do not know, but the fact deprives it of the diagnostic importance which has often been attached to it.

My object in this lecture has been to present to you the aspect of many degenerative diseases of the nervous system as a result of a defect in vitality. The two aspects of death which I mentioned at the onset are very different in our practical view. Somatic death is that against which we ever strive, which we endeavour to postpone as long as may be. The other aspect of death—the termination of life of isolated structures in the body—is to us what we call disease. It does not of necessity involve the termination of general life, but it is not less to be striven against, although the strife must often be in vain. The discernment of these diseases which we may call "abiotic," the recognition of the symptoms, the course, and the conditions which indicate them is of extreme importance. It may save you from many errors, may prevent many mistakes, both in your forecast and your treatment. We must endeavour to check their progress, for we seldom know the strength or feebleness of the tendency, or whether it can be hindered, but the discernment of the nature of these maladies will often help you. It will enable you better to perceive why treatment fails and it may save from useless prolongation of attempts to gain that which cannot be, and it may sometimes save from waste of money that can ill be spared and from the waste of hope which means only deeper disappointment.

The Goulstonian Lectures

ON

SOME ABNORMAL PSYCHICAL CONDITIONS IN CHILDREN.

Delivered before the Royal College of Physicians of London on March 4th, 6th, and 11th, 1902,

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LECTURE I.

Delivered on March 4th.

MR. PRESIDENT AND GENTLEMEN,—The particular psychical conditions with which I propose to deal in these lectures are those which are concerned with an abnormal defect of moral control in children. Interesting as these disorders may be as an abstruse problem for the professed psychologist to puzzle over, they have a very real practical—shall I say social?—importance which I venture to think has been hardly sufficiently recognised. For some years past I have been collecting observations with a view to investigating the occurrence of defective moral control as a morbid condition in children, a subject which I cannot but think calls urgently for scientific investigation. It has long been recognised that such a deficiency may occur in association with those disorders of intellect which are ordinarily recognised as idiocy, imbecility, or insanity, and I suppose no one doubts the morbid nature of the moral defect in these cases, whether it be regarded as dependent upon the intellectual failure or not. But there are other cases which cannot be included in this category—children who show a temporary or permanent defect of moral control such as to raise the question whether it may not be the manifestation of a morbid mental state, but who nevertheless pass for children of normal intellect; it is this condition in particular which seems to me to call for careful observation and inquiry. The importance of some more widespread knowledge of these morbid states, if such they be, is very great, and although some of them persist into adult life, at no other period are the opportunities for investigating them so favourable as in childhood; for in early years the influence of environment has not yet become so varied and complicated as to be altogether beyond our gauge, and it is possible to obtain a more or less accurate and detailed history of the whole life of the individual, a point of extreme importance when the question of a congenital deficiency arises, as it will do in connexion with these cases: moreover, if there be any question of a morbid failure in the development of a mental process it can best be studied in the child, who is still at the age when, as we shall see, such development should be in progress. Whilst, therefore, I propose to consider generally the occurrence of defective moral control as a morbid condition in children, my particular object in this general survey is to determine what evidence there is on which we can base an answer to this question: Is diminution or defect of moral control in children ever the manifestation of a morbid mental state, apart from any such general disorder of intellect as is ordinarily recognised as imbecility, "feeble-mindedness," or insanity? and if so, under what conditions does it occur? It is obvious that such a disorder, if it exist, cannot be studied apart from its clinical phenomena, although some light may be thrown upon it by the consideration of the physical diseases or gross anatomical lesions which are associated with it in certain cases.

MORAL CONTROL IN THE NORMAL CHILD.

It is perhaps hardly necessary to define what is meant by "moral control." For the psychologist it is "the control of action in conformity with the idea of the good of all," and such a definition is at any rate sufficiently comprehensive for my purpose and may serve to correct the misapprehension which is apt to arise in consequence of the popular use of the terms "moral" and "immoral" to connote some sexual relation. The moral control to which I refer has a much wider significance, and its defect in any individual case may have, and indeed often has, no concern whatever with sexual relations; at the same time I would point out that such a definition will cover, not only such activity as is concerned with the good of others, but also with the good of self—in other words, the moral control which I wish to consider is not only the altruistic but also the self-regarding.

Moral control can only exist where there is a cognitive relation to environment. I use the term "cognitive" for lack of a better to imply that capacity for reasoning comparison on which moral control is necessarily based: the term "conscious" would imply too little, the term "intelligent" would imply too much. Out of this cognitive relation arises a consciousness of the relation of every volitional activity on the part of the individual to the good of all and this we may call moral consciousness. Moral control is the control of activity in conformity with this moral consciousness. The capacity for reasoning comparison may be regarded as an intellectual capacity and moral consciousness, inasmuch as it is concerned with more complicated relations, must require a higher degree of this capacity. To this extent moral control also is dependent on intellect; but inasmuch as volition also is concerned in moral control, and volition can hardly be regarded as an intellectual process, it would seem that intellect is not the only factor concerned therein, although it is an essential factor. To this point I shall return again when we come to consider the mental pathology, if I may so say, of defective moral control.

Moral control, it is obvious, is not an attribute of the newly-born child, for the infant only gradually comes into that cognitive relation which must precede the development of moral consciousness; moreover, moral control, as already pointed out, involves volition, and therefore cannot precede the earliest date at which activity ceases to be merely instinctive, reflex, or impulsive, and becomes volitional, a date which is extremely difficult to determine but certainly cannot be placed earlier than some weeks, or possibly months, after birth. Volition, in so far as it is concerned in moral control, may be regarded as inhibitory; it is the overpowering of one stimulus to activity—which in this connexion is activity contrary to the good of all—by another stimulus which we might call the moral idea, the idea of the good of all. There is, in fact, a conflict between stimuli, and in so far as the moral idea prevails the determining or volitional process may be regarded as inhibiting the impulse which is opposed to it. Now volition, as I have already pointed out, does not appear until some time after birth and the gradual and comparatively slow development of inhibitory volition, especially in regard to those forms of activity which are most instinctive and almost reflex in character, such as the expression of the emotions, is a matter of everyday observation, especially to those who have the opportunity of studying children.

Corresponding with this gradual acquirement of inhibitory volition in the normal child we recognise as a matter of general experience a certain rough proportion between the degree of stimulus which can be successfully opposed and the age of the child. I shall not attempt to define this in more accurate terms, for it is practically impossible to do so; but perhaps I may be allowed to illustrate my point by a simple example. An infant, aged 17 months, had been given a key to play with; he was sitting quietly on his mother's knee looking at the key which he held in his hand, when I gently took the key away from him and offered instead a sheet of white paper. The infant burst into passionate cries, bounded up and down on his mother's lap, beating the air with his fists, and when the paper was proffered beat it angrily aside. Here was a little ebullition of rage which was perfectly normal in a child of that age on provocation of that magnitude, but the same ebullition in a child, say of 12 years, on exactly similar provocation would have been altogether abnormal. My object in drawing attention to this point is to emphasise the fact that in considering the possibility of a morbid defect of volition as a factor in any case of defective moral control in a child, we must take into account not only the age of the child but also as far as possible the degree of the stimulus.

The possibility of moral control, as already pointed out, is the outcome of combined cognition, moral consciousness, and volition; but inasmuch as these are only gradually perfected or more fully developed as the child grows

older, it is evident that the further development of moral control must also be a gradual process. The capacity for such development is present, we may reasonably assume, in the normal infant at birth, and so far there is an analogy, not to say connexion, between moral control and general intellectual acquirements; moreover, both are largely dependent on training and environment for their increase. This gradual growth of moral control in the normal child is a point to be remembered when we come to consider how far defective control is to be regarded as a morbid manifestation, for it follows that a degree of moral control which may be perfectly normal in a very young child may be altogether below the average for a child a few years older. Further, we must recognise that the development of moral control varies considerably in different children at the same age; such variation is no doubt in part the result of environment, but partly also, it seems possible, the result of differences in the innate capacity for the development of such control. To this important point I shall refer more fully hereafter; here I will only say that whilst the degree of development of moral control in children at various ages falls in the large majority of cases within a limited, albeit ill-defined, range of variation which we arbitrarily recognise as normal for the age, there are children in whom moral control falls so far below this standard that the question may well be raised whether in such cases the defect is not the manifestation of some morbid psychical condition. In seeking the answer to this question it will, I think, be best to consider, first, defect of moral control in association with general impairment of intellect, for here, at any rate, it will be allowed that the moral failure is a morbid phenomenon.

DEFECT OF MORAL CONTROL ASSOCIATED WITH GENERAL IMPAIRMENT OF INTELLECT.

Morbid defect of moral control in children is most often seen in association with idiocy or imbecility and this association calls for special attention, as it is here that the relation of moral control to intellect can be studied most easily, inasmuch as grades of intellectual capacity are here more easily discernible and therefore more readily available for comparison; moreover, it will, I think, be seen that it is in idiocy or imbecility that we can most easily discriminate between certain differences in the causation of moral defect. In the lowest grade of idiocy moral control is necessarily an impossibility. The drivelling idiot who recognises no one, does not distinguish his food, and is little more than a mere automaton stands in little or no cognitive relation to his surroundings and *a fortiori* lacks that higher form of reasoning comparison which we call moral consciousness. Here, therefore, the absence of moral control is complete. Such cases are of interest chiefly as exemplifying one cause of failure of development of moral control; they have otherwise little bearing on the question before us and need not detain us further. I may, however, point out that in considering cases with any degree of general impairment of intellect caution is required in accepting absence of activity as evidence of moral control; the idiot of low grade does not steal nor, perhaps, does he behave spitefully, but this is not to be attributed to moral control but to the absence of stimulus owing to the fact that he is not in cognitive relation with his environment; and going further one may say that where there is a cognitive relation only to a limited portion of environment to that extent stimulus is limited and the corresponding activities will be absent. For instance, the idiot whose intellectual impairment is such that he has no appreciation of the value of money and does not distinguish it from other objects and has no pleasure even in mere acquisition does not steal, whilst a higher grade idiot who knows the use of money or takes a delight in mere acquisition does steal. To contrast two such idiots as showing in the former case moral control and in the latter its defect would be entirely fallacious; the absence of stealing in the former is due to the absence of stimulus—that particular idiot is, so far as money is concerned, cut off, if I may so say, from his environment.

With this caution we may turn to the consideration of idiots of higher grades, and the first point which calls for attention is the frequency of defective moral control in these children. Of 90 consecutive imbeciles from three to 12 years of age under my own observation 23 showed a lack of moral control which was quite unnatural for the age of the child. It must not, however, be supposed that any one of these children showed every possible manifestation of moral deficiency; indeed, with a morbid defect of moral control from any cause, while it is probable that there will be several manifestations, it is quite unusual for all the possible manifestations to be present. Lack of moral control may be shown in many ways, and it will be convenient to have before us a list of those qualities which in their corresponding activities make up the picture of morbidly defective moral control, as it is seen not only with general impairment of intellect but also, as I shall show, with other conditions in children. These qualities are—(1) passionateness; (2) spitefulness—cruelty; (3) jealousy; (4) lawlessness; (5) dishonesty; (6) wanton mischievousness—destructiveness; (7) shamelessness—immodesty; (8) sexual immorality; and (9) viciousness. The keynote of these qualities is self-gratification, the immediate gratification of self without regard either to the good of others or to the larger and more remote good of self. Some of these qualities, it will be observed, are natural to children at a certain age and to a certain extent; it is their persistence in a degree unusual for the particular age and not corresponding to the influences of environment which constitutes their abnormality in these children. Of the 23 cases which I mentioned 20 showed an abnormal degree of passionateness which in most of the cases was associated with other manifestations of defective moral control, but no one of these was so frequent as passionateness which in two of the cases appeared to be the only manifestation. This predominance of passionateness amongst the phenomena of defective moral control in children with general impairment of intellect is, I think, worthy of notice, for we shall find that not only in these children but also in many of the various conditions under which morbid diminution or defect of moral control occurs passionateness is the commonest of all its manifestations, and, as I shall show, this fact may throw some light on the psychical defect in these cases.

Next in order of frequency is spitefulness or cruelty which was a noticeable feature in 12 out of the 23 cases—I mean by this the wanton infliction of pain or discomfort on others; in my own observations I have somewhat arbitrarily restricted the term "spitefulness" to this tendency when it referred to infliction of pain or discomfort on other human beings, whereas when it was displayed towards the lower animals I have distinguished it as cruelty. Such cruelty was less frequent than spitefulness, it was noted only in two of the cases, but this may have been because there was less often opportunity for its display.

As a third prominent characteristic of deficient moral control not only in imbecile children but also in those whom I shall consider later, with no obvious intellectual deficiency, I may mention lawlessness. I have no figures to show its actual frequency, which, however, I fancy is very considerable. By lawlessness I do not mean, of course, the occasional or even frequent failure to conform to law—whether it be nursery law, school law, or the law of the land—which in greater or less degree is natural to children, but a reckless disregard for command and authority in spite of such training and discipline as experience shows will render a healthy child law-abiding to a certain roughly definable degree varying with the age. The other manifestations were all less frequent, and as I shall have occasion to illustrate them by actual cases I need say little about them here. By jealousy I mean, of course, not the mere emotion but its uncontrolled expression. Shamelessness and immodesty I have placed together as near akin to one another, for both are emotional qualities concerned with the relation of self to others. The essential element in both is an emotional shrinking from exposure to others, whether the ground of such shrinking be fancied or real; and this implies not merely the lowest and simplest form of cognition but also a capacity for reasoning comparison with regard to more complex relations which must approach, if it does not actually reach, the level of moral consciousness. As might be expected, therefore, in imbeciles of low grade both shame and modesty are often lacking, and I would add that it is by no means uncommon with impairment of intellect in children to meet with a curious absence of shyness or reserve, which may be included under the heading immodesty and which may have similar results so far as violation of social custom is concerned. In the idiot of low grade such a condition scarcely attracts notice, for the inability to discriminate between persons or between the different relations of the particular idiot to those persons is sufficiently explained by the profound intellectual deficiency; but in the child who is only slightly backward

this lack of natural reserve is often very remarkable and appears to be due to a defect of that higher form of cognitive relation which, as I have said, comes very near to, if it be not as high as, moral consciousness.

The following case may serve to illustrate these points. A girl, aged seven years, whom I saw by the kindness of my friend Dr. F. E. Batten, had had epileptiform attacks at intervals of a few weeks since the age of 12 months, associated with right infantile hemiplegia of the same duration. Intellectually the child was evidently defective, though only to a slight degree; she had not learnt to talk until fully three years old, but with only 12 months' teaching she had learnt to read short words and could count readily; she could also write the letters of the alphabet fairly distinctly. She described pictures intelligently and accurately. She was said to be very jealous and if much attention was paid to other children in her presence she would sometimes attack them, pinching them or striking them. Passionateness had been more marked formerly than now; at the age of five years she was said to have been "dreadfully violent"; for instance, one day when her mother was in the garden and she was not allowed to come out she flew into a rage, seized a stick, and deliberately smashed the window, and any such thwarting of her wishes was liable to produce an outburst of passion in which she would fling things recklessly about, including cups and saucers. Not the least striking of the qualities shown by this child was her lack of reserve. On entering my consulting-room she walked straight up to me, a complete stranger, and said, "I want a book"; on receiving a picture-book she exclaimed effusively, "You dear doctor; you dear little doctor," and then proceeded to examine the bookshelves for herself and conversed at intervals in an airy way on various subjects, amongst other things describing a medical man whom she had seen previously as "a saucy doctor." She was also described as very self-willed and although she was obedient to a certain extent it appeared to be almost entirely the obedience of fear, for she was frequently punished for disobedience and had to be reminded repeatedly of the instrument of punishment to obtain obedience.

The heading "wanton mischievousness and destructiveness" calls perhaps for some explanation. At first sight it might be thought that such qualities were hardly related to defective moral control, but I think that a little consideration will show that not only have they a very definite relation to the moral deficiency which we are considering but that in these qualities *par excellence* we can discern the lack of those altruistic tendencies with which moral consciousness is chiefly concerned; and this lack, although it is natural, as I have shown, in the infant, and in a less degree in the young child beyond the age of infancy, may be unnatural when it persists in an older child. Let me illustrate my meaning by a comparison of two children. A healthy boy, aged 18 months, who had passed the age at which he cared to tear up books, paper, or anything he could tear, had recently shown a love of throwing things into the fire, no doubt for the pleasure of watching the weird and dancing flames, and perhaps with an almost unconscious pleasure in the power of arousing the flames at will; his action was, in fact, a method of self-gratification which in its total disregard for the possible injury to others by destruction of property obviously implied lack of moral control, a lack which was perfectly normal at that age. But the persistence of this infantile quality in an older child was accompanied by other evidence of a morbid moral deficiency. A girl, aged seven years, had always been backward but by no means extremely so; it was difficult to judge of her intellectual capacity from school attainments, for her attendance had been very irregular and she was so spiteful that it was necessary to separate her from other children in the class, for she would thump, bite, or pinch them, sometimes so severely as to break the skin. She had learnt to sit up alone at 11 months and to stand alone at 16 months, she had talked at 18 months, so that in these respects she was very little behind an average child. She had fits occasionally from infancy up to the age of seven years; she was well developed; her facies showed nothing suggestive of mental impairment; her head measured 19½ inches in maximum circumference—that is, nearly one inch below the average for the age. The mother stated that since the age of about five years her mischievousness had given continual trouble. She would tear up books, and other things, and on one occasion had apparently deliberately set the drapery on the mantelpiece on fire and then sat and laughed and clapped her hands. Seen again at the age of 10½ years this girl, although apparently only backward, was as passionate and as spiteful as ever; in fact, the mother said that it was quite unsafe to leave her with other children. She was also cruel to animals—she would take up the cat and dash it down upon the floor with intent to injure it, and if it happened to cross her path she would kick it. Here, I take it, the child's act in setting fire to the drapery was, as in the former case, an act of self-gratification, but the lack of moral control and, no doubt, of moral consciousness shown in this and in her spitefulness and cruelty was altogether unnatural for the age, and that it was part of a morbid state was, I think, evident in the general intellectual deficiency and in the repeated convulsions. I mention this particular variety of mischief—the setting fire to property—because it is sometimes a prominent feature in the manifestations of a morbid defect of moral control in children who show no apparent impairment of intellect and in such cases it has obviously an important medico-legal aspect.

There is one other heading which, perhaps, wants some definition—namely, viciousness. By this I mean a lack of moral control in such things as concern chiefly the good of self—for instance, self-abuse or other pernicious habits. Dr. G. E. Shuttleworth tells me of a girl, aged 12 years, brought up in good position and apparently of normal intellect, who in addition to precocious sexual immorality would, if unable to obtain alcohol otherwise, drink the methylated spirit used for her mother's toilette.

There is no need for me to dwell upon the moral defect in children with general impairment of intellect; my only reason for referring to such cases is because I think they throw some light upon the conditions which underlie a morbid defect of moral control where there is no apparent intellectual impairment. It seems possible in these children to discriminate between certain differences in the causation of the moral defect. We can recognise, I take it, with certainty two groups, and probably three groups, of cases all showing defective moral control and yet differing considerably in the psychical condition which is associated therewith. In one group, as I have already pointed out, there is absence, partial or complete, of the simple cognitive relation to environment and therefore moral control is impossible; in another the child is, or appears to be, in full cognitive relation with environment so far as what one may call the simpler or lower form of cognition is concerned, but lacks that higher form of reasoning comparison which I have called moral consciousness. Again, I will illustrate my point by actual cases. A well-grown and pretty child, aged two years and four months, has had fits since the age of eight months and is an idiot of very low grade; he does not distinguish between people and it seems doubtful whether he distinguishes between animate and inanimate objects; he bites anything within reach and as he sat in the out-patient room he worried the edge of the table with his teeth like a dog. Two days previously he had seized his mother's finger between his teeth and had bitten it severely enough to make it bleed. He has eaten his own fæces, soap, and such things indiscriminately. He is said to be passionate if thwarted in his endeavours. In such a case it seems evident that there is a lack of the simple cognitive relation, the lowest form of reasoning comparison by which he should have distinguished his mother's finger from other objects, and therefore *a fortiori* he lacked that higher form of reasoning comparison by which he should have distinguished the character of his act as contrary to what I have called the moral idea.

Contrast with this another case. A boy, aged nine years, had been brought to me for mental deficiency. He had learnt to walk and to talk at two years but was very backward intellectually. After being at school for three years he could only read words of one syllable. The chief trouble with him, however, was his passionateness, spitefulness, and disobedience. Any crossing of his wishes produced an outburst of passion, and he had repeatedly thrown knives at the other children with little or no provocation and had also thrown scissors at his mother. Recently he had stolen a shilling from his mother and after spending part of it brought back the change and gave it to her. The mother, a very intelligent woman, volunteered the statement that he seemed to have "no idea of right and wrong"; he seemed incapable of any sorrow for his misdoings. Subsequently this boy became so dangerous to the other children that it was

necessary to send him into an asylum. Unlike the previous case, this boy was, at any rate to a large extent, in cognitive relation with his surroundings, but he lacked moral consciousness, so that, as in the previous case, but for a different reason, moral control was deficient.

But in addition to the two groups of cases thus illustrated we must recognise a third, in which the child is not only in cognitive relation with his surroundings but also shows moral consciousness even with reference to the particular activities in which he manifests his lack of moral control. For instance, a boy, aged six years, is backward; he learnt to talk at two years and to walk at two and a half years; he knows his letters but cannot read words of one syllable after being at school for more than two years. He appears to be deficient intellectually but not to any considerable degree. He is very passionate; if the other children offend him in any way he will run at them and strike them or bite or kick them; he is mischievous, will turn on taps to let the water or gas escape; he is very disobedient and it is found very difficult to prevent his throwing things into the fire which he delights to play with. In order to set fire to pieces of paper he will secretly take away boxes of matches and hide them in his clothes, under his shirt, or elsewhere until he can get away from his mother to light them. After the outbursts of passion and attacks on his brothers and sisters he seems ashamed of his actions, is genuinely sorry for them, and sometimes says that he "didn't mean to do it." Here it seemed clear that there was some degree of moral consciousness—the child could, at any rate, with regard to some activities, differentiate between right and wrong.

This third group of cases is of considerable importance in its bearing on some of the cases with no general impairment of intellect which I shall consider subsequently. The defect is neither in the cognitive relation to environment nor apparently in moral consciousness, and yet the control of activity in conformity with moral consciousness is markedly defective. Have we here to do with a disorder of the will? Is it possible that inhibitory volition is imperfectly developed as the result of the same morbid condition of the brain which has impaired the intellect? There seems to be no *a priori* reason why volition should not be liable to impairment like other mental processes; and if inhibitory volition is of late development both in the individual and in the race it is easy to understand that it will be specially liable to defect in development and to disorder when developed. And there is some evidence that it is a late development; in the individual the control of the expressions of the emotions, such as joy, grief, and fear, is noticeably weak in early life, the infant and the young child weep at causes which would be quite inadequate to produce such an effect in an older child, who in turn will weep over causes which in a higher race would fail entirely to produce any such expression of emotion. Darwin in this connexion has quoted (from Lubbock) the case of a New Zealand chief who "cried like a child because the sailors spoilt his favourite cloak by powdering it with flour." That a similar defect of inhibitory volition with regard to the emotions may result from disease without apparent impairment of intellect is shown in the curious outbursts of weeping which are so common in children with chorea, who at other times show no such lack of control. A very similar failure of inhibitory volition in connexion with grief and fear is not uncommon with gross cerebral lesions—for example, intracranial tumour. I shall have occasion to say something more on this point in a subsequent lecture—here I will only point out that some of the activities in which defect of moral control is shown are expressions of the emotions and are associated with those other manifestations of uncontrolled emotion, such as excessive grief and fear, which are not in any way concerned with moral consciousness; it is probable, therefore, that the defect of moral control in regard to these particular activities, at any rate, is in some cases due to a failure of inhibitory volition.

It would seem, then, that we can recognise in children with defective moral control in association with general impairment of intellect three grades, if I may so say, of deficiency, all characterised by lack of moral control—(1) defect of cognitive relation to environment; (2) defect of moral consciousness; and (3) defect of inhibitory volition. Moral control, in fact, might be compared to a three-storey building; the second floor is impossible unless the one below is present and the top storey—inhibitory volition in accordance with moral consciousness—is impossible unless the two lower floors are present.

Such a categorical statement of the building up of moral control and of the causation of its deficiency of course makes the matter appear much simpler than it really is; no one of these defects is likely to be complete, and hence it is often extremely difficult to make out how far any one of these defects is the chief factor in producing the moral failure in any particular case, and it is quite conceivable, nay, highly probable, that all three may sometimes share in its production.

This consideration of the psychical defects which are concerned in the causation of moral deficiency in children with general impairment of intellect leads up to the important question as to the relation of the moral defect in such cases to the general disorder of intellect. Is the moral defect necessarily proportionate to the intellectual defect? Can we say that this child is of more feeble intellect than that, and therefore will manifest the greater deficiency of moral control? The very question implies that I am drawing a distinction between the manifestations of intellectual capacity and those of moral control. As I have already pointed out, both the simple cognitive relation to environment and the moral consciousness which are essential to moral control imply a reasoning comparison, albeit of very different degrees of complexity, and may therefore be regarded as intellectual processes, and consequently in so far as defect of moral control is dependent upon the lack of either of these it is itself a manifestation of impaired intellect.

But granting all this it may still be that the intellectual process or rather complex of processes concerned in the comparison between right and wrong, between the moral idea and opposing stimuli, may be sufficiently specialised—functionally, of course, I mean, not locally—to allow of its being disordered or defective apart from any such general defect as is commonly recognised as idiocy, imbecility, or insanity. One might bring forward an analogy in the well-known differences in capacity for particular intellectual acquirements which are shown by different individuals. Each of these acquirements represents a particular combination of intellectual processes, and often it appears to be the particular combinations rather than the separate processes which are at fault. A very small capacity for such reasoning as is required in arithmetic or higher mathematics is common enough where the capacity for other intellectual acquirements is even above the average. May I illustrate my point by another analogy? A boy, aged 12 years (for the notes of whose case I am indebted to Dr. R. Farrar of Chiswick), was fully up to the average in the ordinary school accomplishments but was entirely unable to spell words correctly from dictation. For "and then what rogues they are; while one monkey is busy cracking a nut" he wrote, "and torse wothe roeg eose. Woet one loreoy is beoys coreing a beors." Here the special combination of mental processes involved in spelling from dictation was defective, although none of the separate processes involved in that particular combination could be singled out as in any way deficient and in other combinations of these same processes there was no defect whatever. No doubt this condition is explicable on a physical basis in a failure of connexion between parts of the cortex, but the case illustrates the possibility that the particular combination of mental processes concerned in moral control may be defective whilst other combinations of the same processes in what we ordinarily recognise as intellectual acquirements may show no defect whatever.

But apart from any such theoretical probability the clinical phenomena show, I think, that there is ample justification for considering moral consciousness and moral control as liable to disorder apart from the more general intellectual functions. Perhaps the most striking feature of these cases of defective moral control with general impairment of intellect is the disproportion in many cases between the moral and the intellectual deficiency—if capacity for the ordinarily recognised intellectual acquirements may be taken as the gauge of intellect. It is true that in the lower grades of idiocy and imbecility where the simple cognitive relation to environment is lacking or defective the resulting defect of moral control appears to be directly proportionate to the general intellectual defect, and this is only natural, for the cognitive relation to environment is just as essential a factor in general intellectual development as in the development of moral consciousness, so that in so far as this cognitive relation is lacking, both intellectual and moral failure will result—the two, in fact, are dependent on one and the same cause and to this extent are related to one another. But in

other cases with a slighter degree of imbecility the relation between the moral and the intellectual defect becomes much less close, and it would seem that there is not necessarily any direct proportion between them. This much, at any rate, may be stated with positiveness, that of children with slight general impairment of intellect many show a degree of moral control which would not be considered defective in a child of average intellect, whilst others whose general intellectual capacity appears to be exactly similar show a marked defect of moral control; and a child who is only slightly weak-minded may show a much greater moral deficiency than one whose weakness of intellect is much more evident.

It hardly seems necessary to quote cases in proof of these points which must be familiar to anyone who sees many imbeciles; moreover, most of the cases which I have already quoted were children who showed only minor degrees of general intellectual impairment, and I selected them purposely as having for this reason more "points of contact" with the cases which I shall consider in my subsequent lectures. I will, therefore, only add two more to those already instanced. The first case is a girl, aged five and a quarter years, of stolid appearance, although her facies does not suggest any general impairment of intellect; she is backward, did not learn to walk until the age of two years and did not talk until three years old. She does not know her alphabet but has not yet been to school, she takes an intelligent part in ordinary conversation. Her head is below the average in maximum circumference, it measures 18¾ inches, and in the frontal region is unduly narrow. She is extremely passionate; if crossed in any way she will throw herself down on the floor and scream and kick. At meals she has on various occasions thrown cups, saucers, and knives at her mother in rage because she could not have some particular food which she desired. There are other children in the family, and when these have not allowed her to have what she wanted she has run at them and bitten them sufficiently to break the skin. She is also wantonly mischievous, turns on the water-taps and leaves them running, and has at various times stolen eatables and other things. She is said to have very little sense of obedience and corporal punishment seems to have little or no restraining effect. The second case, a boy, aged 11 years, is a pleasant-faced boy, stands up well, and as far as ordinary conversation goes might pass for a normal child. But he is decidedly backward in school attainments, can only read words of one syllable, and cannot multiply beyond twice 12; he also laughs too easily and too often. He is said to be extremely excitable and very passionate on slight provocation; he seems to take a delight in bullying other children—for example, he will go up to children who are quite strangers to him in the street and snatch away their toys, not in order to keep them, for he will give them back afterwards, but apparently because he enjoys their grief; he has stolen considerable sums of money from the teacher at school, probably twice within the last year. In both these cases the general impairment of intellect was very slight; indeed, the children could hardly be classed as "imbeciles," they were rather "backward children," but the moral defect was very marked—in fact, the latter case was sent to me for this rather than for the intellectual condition.

It would be easy to quote cases in which with a general intellectual condition as closely as possible resembling that present in these two children there was no abnormal defect of moral control; for instance, an almost exact parallel to the girl just mentioned was another girl, aged six years, with a dull appearance, who had not learnt to walk or to talk until the age of three years; she took an intelligent part in ordinary conversation but was very slow at school and could not identify the letters of the alphabet in spite of careful teaching; morally, however, this child was in marked contrast to the other, she was good-tempered, honest, and showed, in fact, no abnormal defect of moral control. It would seem, then, that moral defect in children with general impairment of intellect shows no constant proportion to the intellectual defect.

Lastly, the question must be raised whether we can associate defect of moral control with any particular type or types of idiocy or imbecility—a question of considerable importance, for if it were possible to do so we might hope by a study of these types to find some anatomical basis for this abnormality of function. Of the 23 cases to which I have referred two were syphilitic and both had had fits (in one case up to the age of seven years—that is, 18 months before I saw the boy—and in the other up to three months before the date of observation when the boy was five years old); one was epileptic; one was paralytic with infantile hemiplegia and fits; one was an imbecile of the Mongol type; one was a cretin who had been treated for several years with thyroid; and of the remaining 16 who corresponded with no particular type and might be classified with the "genetous" idiots of Dr. Ireland four had had convulsions or epileptiform attacks at some period of their life, but the relation of these attacks to the intellectual impairment was uncertain. In 16 cases the maximum circumference of the head was recorded. In six it was below the average, but only in one case (the Mongol) to any considerable degree (18½ inches at the age of five years); in two of the remaining cases it was below the average. So far, therefore, as these observations go it did not seem possible to associate any particular type of idiocy or imbecility with defective moral control. The relation of moral defect to convulsions or epilepsy is, however, noteworthy—the association was noted in eight out of 18 cases in which the point was inquired into. This proportion is only slightly above that which has been recorded by Dr. Fletcher Beach in discussing the causal relation of convulsions or epilepsy to idiocy or imbecility in general (namely, 33·63 per cent.), quite apart from any question of moral defect, so that no great stress can be laid upon these figures. I may, however, add that Dr. Ireland specially notes of epileptic idiots that "they are often wild, intractable, and irritable—in fact, seem on the boundary line between idiocy and insanity"—and also says that "where epileptic attacks occur eccentricities of conduct may be looked for, such as stealing, cruelty to animals, sleep-walking, or some strange outburst of temper or change of mood." As we shall see, this association of morbid moral defect with epilepsy in children is not peculiar to the epileptic idiot, it is seen where the general intellectual condition appears to be perfectly normal, so that we cannot attribute it to any anatomical condition peculiar to these particular idiots; the subtler changes, whatever they may be, which produce epilepsy alone without idiocy, are equally capable of diminishing moral control. We are, I think, driven to the conclusion that the types of idiocy or imbecility associated with defective moral control are too varied to allow us to connect any particular anatomical condition with the moral defect without post-mortem evidence which at present is lacking. That there are cortical changes, either in the way of arrest of development—for instance, in the Mongol idiot and in some of the genetous idiots—or in the form of gross lesions or degenerative changes, as in the paralytic type, seems almost certain from our knowledge of these conditions where they have occurred without moral defect; but the fact that any of these varieties of idiocy may occur without any morbid failure of moral control, and, further, that a marked degree of such failure may occur apart from idiocy or imbecility, strongly suggests that the cause of the moral defect is to be sought not in any gross lesion or gross failure of development but in some much finer physical abnormality, and this view, I think, will be corroborated by the facts which I shall mention in my later lectures.

If I may sum up the points upon which I would chiefly insist in the foregoing considerations they are these: that a morbid failure of moral control is not uncommon in children with general impairment of intellect—there is, in fact, a congenital limitation of the capacity for the development of moral control associated with a similar limitation of the general intellectual capacity; that except in the lower grades of idiocy and imbecility where the cognitive relation to environment is absent or extremely defective there is not necessarily any direct proportion between the moral limitation and the general intellectual limitation; that no particular type of idiocy or imbecility can be specially associated with moral defect; nor is there any evidence, so far as can be judged from a clinical study of these cases, that any particular gross lesion of the brain is requisite to the limitation of moral control.

VACCINATION IN WORKHOUSES.—At a meeting on March 21st the Tavistock (Devon) Board of Guardians instructed the medical officer to revaccinate, at his discretion, all the inmates of the workhouse above 10 years of age.—The Barnstaple (Devon) Board of Guardians on March 21st decided that all tramps must be revaccinated before being admitted to the workhouse.

The Milroy Lectures

ON

THE ETIOLOGY OF TYPHOID FEVER AND ITS PREVENTION.

Delivered at the Royal College of Physicians of London on Feb. 20th, 25th, and 27th, 1902,

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LECTURE II.[1] (*concluded*).

Delivered on Feb. 25th, 1902.

I NOW come to instances of outbreaks of typhoid fever which have been traced to the pollution of streams and rivers supplying drinking-water. Early in the "seventies" I traced a severe outbreak of about 180 cases of typhoid fever which occurred in the fishing village of Mevagissey (Cornwall) to the contamination of the stream running through the village by the excreta of a typhoid fever patient who had come there during an early stage of the disease.

In 1882 Dr. F. W. Barry reported on an extensive outbreak of typhoid fever at Bangor and its neighbourhood. He showed that this outbreak was due to an "*extremely well-marked case of enteric fever of a severe type* which occurred at a place called Llwynrhandir. The medical officer of health directed the inmates to bury all excreta, &c., and this they promised to do. From information, however, obtained from credible witnesses," says Dr. Barry, "I am convinced that nothing of the kind was done until a considerably later period when no doubt the discharges from this particular patient were buried in the garden. *The slops and washing water from this house are thrown into a sink at the back and pass by means of a covered rubble drain along the back of it and the house adjoining, where it discharges into a small rapid stream, which in its turn is conveyed as far as the boundary wall of the garden in a similar covered drain, and is thence conducted by means of an open ditch direct to the river Gaseg, into which it discharges at a point about 350 yards above the intake of the Bangor water-supply, the whole distance from the house to the intake being about 700 yards.* Upon removing some of the stone covers from a portion of the stream near the house a most offensive smell was perceived. The stream has an exceedingly rapid flow, so much so, indeed, that some white-wash which I poured into the sink behind the infected house could be traced for a considerable distance towards the Gaseg. It will thus be seen that there is a direct communication between the infected drain at Llwynrhandir and the small stream from which the Bangor water-supply is drawn and in this manner no doubt infected matter found its way into the filtering reservoir. The privy at Llwynrhandir is of the ordinary cesspool type; the pit is, however, below the level of the drain already referred to. As to the capability of the filtering material in the filtering beds at the water-works for destroying or preventing the passage of infective matter we know little, and here the question need not be considered, because I found that from the presence of old defective plugs in the filters themselves fully a third of the water was passing direct into the watermain without any filtration whatever. The filtering sand has not been renewed for a great number of years, although I understand that it undergoes a certain amount of cleansing from time to time. I was further informed by the clerk to the urban sanitary authority, who is also the waterworks manager, that from the peaty character of the water the filters frequently become clogged, and at such time the water cannot be filtered rapidly enough to meet the demand, hence the water is passed into the mains without any attempt whatever at filtration. Here, then, we have established a direct means of communication between the consumers of water and the specifically poisoned contents of a drain at Llwynrhandir; further, we have cases occurring simultaneously miles apart from one another which, with the exception of the water-supply, had no circumstances in common, there being also an entire absence of cases in houses not so supplied. I have, therefore, now no hesitation in attributing the primary spread of the disease to the water-supply."

After describing the course of the outbreak he concludes as follows: "Taking all the facts of the case into consideration, it is my opinion that the water-supply became specifically infected to a slight degree on or about May 22nd, and that this pollution continued until the end of June. That this continuous slight pollution accounts for the dropping nature of the cases up to July 7th. That the special outbreak in the second and third weeks of that month was due to the communication of infected matter in a concentrated form owing to the disturbance in the reservoir and filter-beds, resulting from the accident to the main on June 30th. Finally, that a certain number of the cases which have occurred from the end of the first period to the present time are due to the direct introduction of infected air from the sewers into which the discharges from cases of enteric fever had been received." (Twelfth report of the medical officer to the Local Government Board for 1882.)

An outbreak at Mytholmroyd (Yorkshire) in 1888 was attributed by Dr. Page to pollution of the river Calder by the sewage of towns higher up its course. In 1891 Dr. Hubert Airy prepared a most important and comprehensive report on the Outbreaks of Enteric Fever in the Valley of the River Tees in 1890-91, in which he showed that these outbreaks were especially amongst the users of water from the river for domestic purposes, thus "it was found that the rate of attack from enteric fever per 10,000 living during the first six weeks' epidemic had been 33 amongst persons supplied by the Tees water, and three amongst persons supplied with other water; whereas in the second six weeks' epidemic the rates were 28 and one respectively. Indeed, during the two periods together for every single person who contracted enteric fever amongst the population not using the Tees water 15 contracted it amongst those who were supplied from the river." This river was liable both habitually and still more during floods to fouling by human excreta and other filth from the town of Barnard Castle and some 20 villages and hamlets. Commenting on this the late Sir R. Thorne remarked: "Over a wide area covering 706,020 acres, or 1103 square miles, and containing 503,616 inhabitants, enteric fever has for years past been unduly prevalent. Within this area, where the infective material is thus constantly ready to hand, there occur in 10 sanitary districts, covering 117,404 acres, and containing a population of 217,363, two marked and sudden outbursts of enteric fever, each of large amount, the remaining area meanwhile exhibiting, as regards its constituent sanitary districts, comparatively insignificant 'fever' rates. One of the outbursts is at a time of year when, apart from some exceptional and unusual factor, enteric fever is not apt to prevail in epidemic form in this country. Within the sanitary districts invaded by the two epidemic prevalences some localities suffer heavily whilst others escape exceptional incidence to the disease. One factor alone is found to be common to the places thus suffering exceptionally from enteric fever and this is the use of water pumped from the river Tees. This river is found to be at all times subject to conditions of the grossest fouling by reason of the fact that human excreta and other filth are knowingly and deliberately conveyed to it. Opportunities for the access of the specific material of enteric fever to the river had been constantly recurring. And immediately antecedent to the epidemic outbursts sudden floods washed vast masses of the filth which had been accumulating on the banks of the river down the stream up to and past the points of intake from which the water was being pumped and, after filtration through sand and gravel, delivered to certain populations. These populations it was who suffered from the two exceptional prevalences of enteric fever. Seldom, if ever, has a case of the fouling of water intended for human consumption, so gross or so persistently maintained, come within the cognisance of the medical department, and seldom, if ever, has the proof of the relation of the use of water so befouled to wholesale occurrence of enteric fever been more obvious and patent." (Report of the medical officer of the Local Government Board for 1892-93.)

In 1891 Mr. E. L. Jacob traced an outbreak of 25 cases at Catteshall Paper Mills, near Godalming, to the temporary use of the water of the river Wey for drinking. "At one of the

[1] Lecture I. and the first portion of Lecture II. were published in THE LANCET of March 22nd (p. 793) and April 5th (p. 942), 1902, respectively.

houses in the borough of Godalming which drained into the river Wey above the mills there were some cases of typhoid fever in April and May; the specific poison of the fever, therefore, was probably passing into the river from that house at the time when it was distributed to the cisterns in the clay-room at the mills." (*Public Health*, vol. iv., p. 188.)

An outbreak of typhoid fever at King's Lynn and Gaywood (Norfolk) was reported on in 1892 by Dr. Bruce Low. This outbreak was particularly interesting because it was ushered in by a "sudden outbreak of diarrhœa attacking all classes and all parts of the town during the last few days in February, followed by development of numerous typhoid cases about a fortnight later." This outbreak was due to the fact that the water-supply of the town was derived from Gaywood river which flows through cultivated fields and gardens. The intake of the water is within the borough boundary and the filtration adopted is very insufficient. The contents of privy pits in the town into which the discharges of some typhoid fever cases have been thrown were spread before the time of the outbreak on part of a market garden abutting on the river and about a mile above the intake of the water-supply and the "excreta from a house outside Gaywood wherein eight persons were attacked one after the other with typhoid fever between November and March had been placed in a pit in the garden, from which it was washed into the river above the intake by the melted snow and heavy rainfall that occurred in the third week in February."

Dr. Bruce Low reported in 1893 on an outbreak at the villages of Nunnington and Ness-in-Ryedale (Yorks). The water-supply of these villages is derived from the river Rye which is largely polluted by the sewage of Helmsley and by the washings from land on which local privy "muck" and Leeds town manure are spread from time to time. The chief interest in this outbreak is that it was cut short by all the water used for all domestic purposes being boiled. In 1895 Dr. Bruce Low reported on an outbreak of typhoid fever in September in certain riverside villages below Helmsley, just after the outbreak at that town caused by infected milk (see page 1022). This outbreak was "confined to those persons who drank raw river water taken from the Rye at points below that at which it is polluted by the sewage of Helmsley."

In 1897 Dr. F. St. G. Mivart reported on a sudden outbreak of typhoid fever at King's Lynn borough and Gaywood parish (Norfolk) early in October. The fever was distributed indifferently throughout both places. The water-supply was derived from the river Gaywood "which is exposed freely to pollution of all kinds throughout its course." The river water was delivered without filtration, an abundance of contaminating matters having been washed into the river by the excessive rainfall on Sept. 29th.

In 1899 Dr. S. W. Wheaton reported on an outbreak in the borough of Ilkeston (Derbyshire) as follows: "Fever prevalence in all probability due to pollution of the general water-supply of the town, which is derived from the Nut brook and imperfectly filtered. The water of the Nut brook is grossly polluted by liquid refuse from dwellings at Henor, effluent from the Henor sewage farm, and numerous other sources of contamination."

In the twenty-second annual report of the State Board of Massachussets for 1890 is a report on typhoid fever in its relation to water-supply by Mr. Hiram F. Mills, in which it is stated: "Twenty-five years ago the average number of deaths by typhoid fever in 10,000 inhabitants in the places which are now cities in this State was 7·8, the number now dying yearly from this disease in the same places is 4·6 in 10,000 inhabitants. In fact, the actual number of deaths from this disease 25 years ago in these places, when their population was only six-tenths as much as at present was as great as it is now, and if measures for its prevention had not been taken and the death-rate had continued as it was 25 years ago we should now have 1000 deaths yearly, when the actual number in the cities is about 600. By carefully plotting upon maps of the cities the residence of all cases reported to the local Board of Health, together with the deaths, the distribution, though not even over the whole city nor strictly proportioned to the density of population, was so general that it could not be attributed to possible cases of typhoid fever at two or three of the large number of farms that supplied milk to the 100 or 200 milkmen who distributed milk through the territory where the cases of disease were found. On the other hand, the cases found in Lawrence were all within the territory supplied with water from the city waterworks, and several of the cases were in the thinly settled and apparently very healthy portions of the city, near the outer limits of the water-pipes. In Lowell the cases were very generally distributed throughout the territory, the numbers following nearly the density of the population. These conditions and the discovery of a probable cause of the contamination of the Lowell water-supply by fæces of typhoid patients discharged into Stony Brook, only three miles up stream from the intake of the Lowell waterworks, followed in a few weeks by the very rapid increase in the number of deaths from typhoid fever in Lowell, and these deaths followed in about six weeks by an alarming increase in the number of deaths in Lawrence, whose water-supply is drawn from the Merrimack river nine miles down stream from where the Lowell sewage enters the river, and the further discovery in December of typhoid fever germs in water from the service-pipes of the city of Lawrence, induced the board to send to the Mayor of Lawrence" a letter "warning the citizens not to use the city water for drinking until after it has been boiled for at least 15 minutes; and that when boiled it should not be cooled by putting into it ice obtained from the river this winter. This precaution should be continued as long as typhoid fever prevails in Lowell."

And he sums up the results of his investigation as follows: "We have found this relation existing between typhoid fever and water-supply—viz., that in general in the cities of the State the death-rate by typhoid fever has been greatly reduced by the introduction of a pure public water-supply; that in the one city, where there has not been such a reduction, a portion of the people use for drinking water from canals or from wells subjected to serious pollution by sewage; and that the deaths from this disease are much more frequent among that portion of the community than among others. The only two remaining cities which have not decreased death-rates by typhoid fever after the introduction of public water-supplies receive their supplies from a river polluted by sewage; and the seasons in which this disease prevails in these cities are later than those of other cities, and in the lower city on the river later than in the upper city, at a season when other cities are nearly free from the disease and at the time when it would follow if produced by the sewage from the upper city; further, that when the water of the river which passed the upper city and received its sewage during the greatest prevalence of the disease there had reached the service-pipes of the lower city, and there was the greatest prevalence of the disease in the lower city, typhoid fever germs were found in water from these service-pipes."

In the twenty-fourth volume of the reports and papers of the American Public Health Association for 1898 an account is given by Dr. John Leal, health officer, Paterson, New Jersey, of an outbreak of which he says: "No possible common means of infection could be found except the public water-supply, upon which all of those affected, with the possible exception of two or three, were dependent for at least a portion of the 24 hours. It also appeared that the only section of the city which did not contain a single case of the disease was also the only section not furnished with the public water-supply." It appears that "a resident of Little Falls (a place on the river above Madison) returned from a summer resort ill with typhoid fever on August 28th. The fever subsided about Oct. 1st but a relapse followed, lasting from about Oct. 8th to the end of the month, when finally convalescence began. The water-closet receiving the discharges of the patient was connected with a series of cesspools, connected with each other by overflow-pipes, and the last cesspool of the series discharged through a hidden pipe into the river. These cesspools, having thus become infected about Sept. 1st, continued to receive fresh infection until about Nov. 1st, when the patient was actually convalescent." Bacteriological examination of the water above Little Falls gave a negative result both as to bacillus coli and bacillus typhosus, but "below Little Falls the chemical evidence of harmful pollution was found, the average number of bacilli per cubic centimetre was 600, and in 90 per cent. of the specimens examined colonies of the common colon bacillus appeared." On a specimen taken at the intake on Sept. 23rd Dr. Connolly reported as follows: "Tests for typhoid bacilli revealed the presence of a non-liquefying active-motile bacillus which did not produce gas in the presence of culture media containing sugar, nor did it produce indol, and in other respects was identical with the typical bacillus of typhoid fever."

On Nov. 24th the discharge pipe from the last cesspool into the river "was discovered and further infection from that source prevented. Not more than 28 cases were infected after this date and of the 28 cases 18 were infected within the first week and seven within the second week after it. Thus it appears that within two weeks of the shutting off of fresh infection the typhoid bacilli already in the river had practically disappeared owing to surrounding conditions not being so favourable as in the cesspools and to the effect of the downward flow of the current. It seems reasonable to believe, however, that the infection of the river and its attendant results might have continued indefinitely, owing to the conditions favourable to bacterial life existing in the cesspools, had not those sources of infection been discovered and cut off."

In the twenty-fifth volume of the reports and papers of the American Public Health Association for 1899 Dr. Leal reported on an outbreak at Paterson which he showed was caused by the public water-supply derived from the river Passaic "which at least 98 per cent. of those infected were known to use for at least a portion of the 24 hours." In the course of his report he says: "The suspicion thus cast upon the public water-supply as being the only factor common to the case was confirmed by the following facts: First. The only section of the city in which the disease did not appear is the only section not having the public water-supply. Second. The city of Passaic, supplied from the same source, was found to be suffering from an outbreak of typhoid fever at the same time. Third. The course of the epidemic was marked by sudden rises and falls. Fourth. These rises and falls were preceded by heavy rains and, consequently, rising waters." He found that the outbreak was caused by the excreta from a case of typhoid fever which developed during the early part of August, 1898. "The drainage from the premises of said patient was through a pipe into a small tributary of the Passaic river about 8000 feet above the intake. The local board of health, learning of the case on August 23rd, at once cut off drainage from said tributary, so that infection directly from said case ceased on that date." The water from the tributary had to run through a swamp before joining the river and refuse from a glue and gelatin factory also contaminated the waters of the tributary.

The theory evolved by Dr. Leal from these facts is as follows: "That the said tributary was infected from said case of typhoid while high from the heavy rain of August 10th; that the infected water of tributary spread over said swamp and, falling, left numerous pools, puddles, &c., cut off from the natural channel. That in these pools, puddles, &c., existed the conditions favourable to the vitality and multiplication of the specific bacilli, these conditions being the low dilution, the unusual amount of organic matter on account of the glue and gelatin factory, the close and rank vegetation, &c. That a certain number of these bacilli were washed down the river by the rising water following each rain, with a certain amount of damage as a result—the greater the rainfall the greater the amount of damage done. That the infection of new cases ceased after the first week in February is explained by the fact that the general thaw following the heavy rain of Jan. 24th changed said swamp into a raging torrent, thoroughly washing it out and keeping its entire area under three to 10 feet of water for two or three weeks."

An interesting report by Dr. H. C. H. Herold, the president of the Board of Health, on an outbreak at Newark, New Jersey, is contained in the same volume. It appears that Newark was formerly supplied by the Passaic river, the water of which was contaminated, but that in April, 1892, that supply was abandoned and a supply known as the Pequannock water system was adopted. After this there was a steady decrease in the number of cases of typhoid fever until 1898 when there was a marked increase, especially in August and September. This was found to be due to shortages in the daily Pequannock supply having been met by turning in contaminated water from the Passaic river.

My friend Dr. Pistor of Berlin has kindly forwarded me a copy of a report by Dr. Räuber of Remscheid (Rhine Province) on a serious outbreak in that town in 1900. There had been a few cases yearly since 1890 and a small outbreak in 1899, but in 1900 the number of the cases rapidly increased until there were no less than 118 cases between July 9th and 21st. The cause was found to be from the water of one of the streams contributing to the water-supply having become polluted (*Zeitschrift für Medizinalbeamte*, Heft 19, 1901), and also one by Dr. Mewius of Cosel (Silesia) on an outbreak at Leukan and two other villages on the course of the same ditch which supplied them with water and which was contaminated by the excreta of two typhoid fever patients in a cottage higher up (*Zeitschrift für Medizinalbeamte*, Heft 17, 1900).

Dr. Maclean Wilson reported in 1893 on a sudden outbreak of typhoid fever at Chester-le-Street (Durham) which was followed after a short interval by another equally sudden. The sufferers in both cases were almost entirely persons using one public water-supply which had before the commencement of both outbreaks been contaminated by enteric fever discharges from some cases in a group of cottages about three miles above the intake of the water company. The sewage from these cottages ran by means of a covered drain into a small stream, a tributary of the Stanley burn which supplies the filter-beds of the company, but these filter-beds were quite inefficient for the purpose of preventing any germs of enteric fever contained in that water from gaining access to the street mains of the company.

Whereas the seasonal prevalence of typhoid fever is normally in the autumn months this disease is more prevalent and fatal in London during the winter months. Since 1890 I have pointed this out for St. George's, Hanover-square, for which I was formerly medical officer of health, and the following table from my report for 1900 shows that during every year except 1897, the monthly average for November and December was higher than that for August, September, and October.

Cases of Typhoid Fever.

Year.	August, September, and October.		November and December.	
	Number of cases.	Average per month.	Number of cases.	Average per month.
1891	6	2·0	12	6·0
1892	15	5·0	15	7·5
1893	16	5·3	18	9·0
1894	14	4·6	29	14·5
1895	11	3·7	10	5·0
1896	15	5·0	15	7·5
1897	16	5·3	6	3·0
1898	7	2·3	18	9·0
1899	14	4·7	11	5·5
1900	13	4·3	10	5·0

This rise in the number of cases of typhoid fever reported in the months of November and December "is coincident with the increase of organic matter in the drinking water due to the flooded state of the river." On account of my condemnation of the water supplied during the month of December, 1898, in my report for that month, in which I stated that the samples of water supplied by both the companies (Grand Junction and Chelsea) were, according to Mr. Cassal's analysis, of "decidedly inferior quality," both of the companies wrote letters on the subject, forwarding with them reports by Professor Sir Edward Frankland and by Sir William Crookes and Professor Dewar, on which I prepared the following report:—

"With regard to the letters from the water companies, on which you have asked me to report to you, I find that the reports sent with them confirm my opinion of the inferior quality of the samples of water supplied in December as deduced from the results of the analyses made by your public analyst, Mr. Cassal.

"Thus Professor Sir Edward Frankland, in his report, referring to the Thames companies, says, that 'owing to heavy floods and insufficient storage the water sent out by all the companies, except the West Middlesex, *contained an excess of organic matter* which was, however, *almost* entirely of vegetable origin' (the italics are mine). It is true that he says it 'was in every case efficiently filtered before delivery,' but this means that it contained no notable quantity of suspended matters and neither did Mr. Cassal's analyses show any excess of such matters.

"Sir William Crookes and Professor Dewar, in their report, make no remark on the amount of organic matter beyond stating that 'the purity of the water in respect to organic matter has been determined by the oxygen and combustion processes.' From the results of their analyses, as shown in their tables, I find that the 'oxygen required to oxidise the organic matter' averaged for the Grand Junction Company 0·071 of a grain per gallon, and for the Chelsea Company 0·065 of a grain per gallon, whereas in the month of September last it averaged only 0·025 for each company; in other words, the amount of 'oxygen required to oxidise the organic matter' was for the Grand Junction Company nearly three times as much, and for the Chelsea Company two-and-a-half times as much as that required in September.

"I may remind you that this impurity of the waters supplied during the winter months is no new thing. I have reported on it year after year since 1873, and you may remember that you have addressed complaints to, and received similar answers from, the water companies many times before.

"I may also remind you that I have pointed out that for several years (with the exception of 1897) there have been more cases of enteric (typhoid) fever in the parish per month during November and December than during the preceding three months, and also that this disease has been unusually prevalent and fatal in London during the last three months. Now November, December, and January are not the months for the 'seasonal prevalence' of this disease, and, therefore, some other cause for the excess of it must be sought for, and it may be something more than a coincidence that in those very months London is supplied with water which, according to Sir Edward Frankland's report, contains 'an excess of organic matter.'" (Feb. 14th, 1899.)

In answer to this the following letter signed by Sir William Crookes for himself and Professor Dewar was sent to the vestry clerk by the directors of the Grand Junction Water Company:—

"Our attention has been drawn to a special report on the water-supply by Professor W. H. Corfield, medical officer of health to the Parish of St. George, Hanover-square, from which it appears he confirms the opinion of Mr. Cassal that the water delivered by the Grand Junction Company during December last was of inferior quality. This is diametrically opposed to the opinion we have arrived at from our extensive experience of the conditions of the water-supply from day to day.

"Dr. Corfield draws attention to the fact that both our report and that of Sir Edward Frankland on the character of the water-supply to the metropolis during December last show that the majority of the Thames-derived supplies contained an amount of organic matter in excess of the average amount. This observation is simply an expression of the fact that all river-derived supplies have a period of maximum and minimum amount of organic matter during the course of the year. The maximum generally occurs in Thames water during the winter months and the minimum during the summer; and, as Sir Edward Frankland stated in his report for December, the over-charge of organic matter was 'almost entirely of vegetable origin.'

"The same remark applies to the amount of oxygen required to oxidise the organic matter. It is nothing unusual for river supplies to require three times as much oxygen during some period of the winter as compared with the summer supply. With regard, then, to the Thames supply during the month of December last, there was nothing exceptional in the oxygen absorption.

"Dr. Corfield, having pointed out these admitted facts, nevertheless puts an erroneous construction on what Sir Edward Frankland and ourselves intend to convey by our statement that the water before delivery had been efficiently filtered. Dr. Corfield seems to think that this is intended to express that the supply contained 'no notable quantity of suspended matters,' whereas our intention, and no doubt that of Sir Edward Frankland, was to convey that the water had not only been freed from matter in suspension, but had been bacteriologically purified to the extent of over 99 per cent. from its natural condition; thus removing the suspicion of the possibility of its conveying any water-borne disease.

"Dr. Corfield proceeds to point out that enteric fever has been more prevalent in the parish of St. George, Hanover-square, during November and December than during the three preceding months and that the same remark applies to London generally. From this occurrence, combined with the fact to which we have above referred, relating to the organic matter, he suggests that the coincidence may be attributed to the cyclical excess of organic matter which occurs during the winter months.

"All the facts are against any such hypothesis. Our recorded analyses of the Thames-derived waters since 1881, together with the Registrar-General's statistics of enteric fever, enable us to state that there is no causal relation between the two. Indeed, this must inevitably be the case, for it is common knowledge that if any such disease as enteric fever originates through a contaminated water-supply, it is not the *amount* of organic matter but its *nature* that is the dangerous factor and this must be the presence of the specific living germ characteristic of the disease.

"No one has alleged that Thames water which has undergone storage and filtration similar to that of the London supply contains any such pathogenic organisms. It is true that Dr. Corfield seems to entertain a different view of the origin of typhoid epidemics, for during the course of the Maidstone inquiry, when it was proved beyond all doubt that one of the sources of supply had been grossly contaminated with fæcal matter and had been distributed to Maidstone without proper and systematic, or indeed any, filtration, Dr. Corfield, while admitting there had been pollution, said 'it was some vegetable pollution that had got in.'

"There is no comparison between the conditions of the polluted spring water-supply which originated the Maidstone epidemic and any polluting conditions which can arise in the Thames valley, where strict supervision of all sources of contamination is so efficiently maintained—a supervision which we know has materially improved the condition of the raw river water over what it was 10 years ago.

"We say deliberately that after mature investigation we know of no example of a water-borne disease having originated from a river supply where proper precautions are taken for adequate storage and effective filtration, such as exist in the case of the London water-supply." (31st March 1899.)

This was referred to me by the committee of works, and I prepared the following answer to it, which was issued as a "Further Special Report on the Water-supply":—

"In accordance with your instructions I have considered the report forwarded to you by the Grand Junction Waterworks Company, and signed by Sir William Crookes on behalf of himself and Professor Dewar, the company's analysts, and beg to report thereon as follows:—

"The report in question admits the fact that there is an excess of organic matter in the filtered river water supplied to London in winter, and explains it by the statement 'that all river-derived supplies have a period of minimum and maximum amount of organic matter during the course of the year. The maximum generally occurs in Thames water during the winter months and the minimum during the summer.' This is another way of stating what I have pointed out for many years past, that the water supplied by the Thames water companies during the winter frequently, and indeed usually, contains an excess of organic matter, due to the fact that the river water in winter is dirty from the washing of polluting matter from various sources into the river. To say that there is nothing exceptional in the occurrence of an excess of organic matter in the water in winter is merely to admit that the water in winter is generally polluted.

"The report next accuses me of putting an erroneous construction on what Sir Edward Frankland and the writers intend to convey by the statement that the water before delivery had been 'efficiently filtered,' in saying that this was intended to express that it contained 'no notable quantity of suspended matters,' whereas their intention 'was to convey that the water had not only been freed from the matter in suspension, but had been bacteriologically purified to the extent of over 99 per cent. from its natural condition.' This would seem to imply that bacteria are not suspended in the water, but as that cannot be intended I need only reply that I included them among the suspended matters, that my statement was strictly correct, and that apparently efficient filtration is not to be considered to include the removal of foul organic matter in solution in the water.

"The non-removal of such organic matter is, then, admitted by the company's analysts, and I may remind you that Sir Edward Frankland in his report for December, referring to the Thames companies, says that 'owing to heavy floods and insufficient storage the water sent out by all the companies, except the West Middlesex, contained an excess of organic matter which was, however, almost entirely of vegetable origin,' but the writers of the report in question go on to traverse my very temperate statement that 'it may be something more than a coincidence' that the exceptional prevalence of enteric fever in London during November, December, and January, which are not the months for the seasonal prevalence of this disease, occurs in the very months in which London is supplied with water which contains 'an excess of organic matter.' They say 'it is common knowledge that if any such disease as enteric fever originates through a contaminated water-supply it is not the *amount* of organic matter but its *nature* that is the dangerous factor, and this must be the presence of the specific living germ characteristic of the disease. No one has alleged that Thames water which has undergone storage and filtration similar to that of the London supply contains any such pathogenic organisms.'

"In answer to this I may, in the first place, point out that Sir Edward Frankland and others have over and over again found organisms in the filtered Thames water supplied to London, considerably in excess of the number taken as the standard—viz., 100 microbes per cubic centimetre.

"In a report recently issued by the Joint Public Health and Water Committees of the London County Council, I find that 'in the years 1896 and 1897 Sir Edward Frankland made 199 examinations of filtered water for the purpose of ascertaining the number of bacteria, and found that they varied from 16,000 per cubic centimetre down to nothing. The average, taking the whole of the 199 examinations, gave 232 per cubic centimetre, the standard admitted by Sir E. Frankland being that they should not exceed 100 per cubic centimetre. Out of the 199 days' examination by Sir E. Frankland there were 55 days in which the bacteria exceeded the standard, and for the whole 55 days they averaged 763 microbes per cubic centimetre; so that 28 per cent. of the results of Sir Edward Frankland's examination tend to show that the filters are not an effectual barrier against the passage of bacteria.'

"In the twenty-sixth annual report of the Local Government Board Sir E. Frankland states that 'in June, 1896, nearly the whole of the filter beds of all the companies became infected with bacteria.' Further on the same report states that 'the engineer of the Southwark and Vauxhall Water Company in the evidence recently given by him before the Royal Commission on London Water Supply admitted that in December, 1896, 16,000 bacteria per cubic centimetre were found in water that had passed one of their company's filters and that nothing was discovered to explain the fact.

"Drs. Parkes and Rideal have recently submitted a valuable joint report to the Chelsea Vestry on their examination of the water supplied by the Chelsea Waterworks Company from November, 1897, to November, 1898. In this report they clearly show that organisms of various kinds and in varying numbers passed through the filter-beds, some of these organisms being of the kind of which the bacillus coli communis, which is found in enormous numbers in sewage, is a type; and being found in 19 per cent. of the total number of specimens tested for them. Of this test they remark: 'The test, also, when it gives an affirmative result, not only tends to indicate the tainted sources of supply of the Thames, but also tends to show that the methods of sand filtration pursued by the company are ineffectual in eliminating from the filtered water microbes of which the common resting place is sewage and animal excrement.' The conclusions they arrived at are 'that even in a year exceptionally favourable to the purifying operations undertaken by the water companies, the element of danger necessarily attaching to the supply of a water taken from sources inevitably exposed to contamination is not by any means invariably eliminated by the methods of purification at present relied upon. A system of filtration which does not invariably keep out or destroy the common accompaniments of sewage and animal pollutions may, on the occasion of epidemic prevalences in communities on the river banks above the companies' intakes, also allow the passage of the infective disease organisms in numbers sufficient, as the case may be, to cause epidemics amongst the water consumers, or mere sporadic outbreaks, or isolated occurrences amongst the more susceptible of the population. We are, therefore, of opinion that considerations of public safety require that reliance should not be placed upon sand filtration as at present conducted, as the sole means of defence, when the water to be operated upon is derived from a tainted source. The question of the presence of "blood-brat" organisms in the water, their relations to season and to water temperature, and to the occurrence of diarrhœal complaints in the late summer, to which some reference has been made above, appear to be deserving of more prolonged and detailed investigation.'

"As to the fact that 'pathogenic organisms' have not been found in the water supplied by the Thames companies I need merely say that the bacillus of enteric fever has rarely, if ever, been found in any water-supply. It was not found, for instance, in any sample of water supplied

to Maidstone, and on this point Dr. Washbourn said in his report that '*no importance can be attached to the failure to discover the typhoid bacillus in water suspected of being the cause of an epidemic of typhoid fever.*' If this is so, it is still less likely that the typhoid bacillus would be found in water which is merely suspected of producing typhoid fever in those persons of the community who are peculiarly susceptible to it. In fact, the test which shows whether a water contains typhoid poison is not the discovery in it of the bacillus of the disease, but the fact of its producing or not producing that fever among the people who drink it.

"Sir Wm. Crookes and Professor Dewar allude to the Maidstone inquiry and say that 'it was proved beyond all doubt that one of the sources of supply had been *grossly contaminated with fæcal matter.*' The Local Government Board inspectors who conducted the inquiry came to no such conclusion; they merely say that the water sources 'were all exposed *to the risk of* pollution' and they add 'there is *no conclusive evidence* to show either how the specific pollution of typhoid fever was introduced into the supply, or which of the springs was thus polluted.' (The italics are mine.)

"As to the chemical evidence of pollution of the Maidstone water I have before me the table of analyses of the water referred to, and find that out of 22 samples examined five showed signs of organic contamination. In one sample this contamination was rather greater than in the samples of water supplied to St. George's, Hanover-square, last December, but not greater than in samples that have been supplied on other occasions, but in the other four it was less, and in all of them the results of analysis tend to show that the organic matter was 'chiefly of vegetable origin.'

"The organisms found by Drs. Sims Woodhead and Washbourn in the Maidstone water were of similar kinds to those found by Drs. Parkes and Rideal in the waters supplied to Chelsea, and, as already stated, the typhoid organism was not found in any sample.

"The company's analysts go on to say 'there is no comparison between the conditions of the polluted spring water-supply which originated the Maidstone epidemic and any polluting conditions which can arise in the Thames Valley, where strict supervision of all sources of contamination is so efficiently maintained,' a conclusion diametrically opposite to that arrived at by the Public Health and Water Committees of the London County Council, who say in their report: 'We consider that in respect of physical conditions the causes which led to the typhoid epidemic in Maidstone have a parallel in the conditions of the London water-supply. The epidemic was caused by water drawn from polluted sources. It is admitted, and the facts above quoted conclusively show, that the water supplied to London is also derived from sources liable to become polluted. As Sir Alexander Binnie points out: 'This is but another instance among many which teaches the general lesson that for many years a population may be supplied with water from various sources without any apparent harm to the consumers and that the water so taken has been repeatedly pronounced after chemical examination to be pure and wholesome, but that if the water is derived from a source liable to pollution sooner or later the time generally arrives when an epidemic breaks out owing to circumstances connected with the pollution of the supply.'

"In this connexion the following remarks of Dr. Clowes, the council's chemist, are worthy of attention: 'While there are grounds for believing that the comparative immunity from typhoid fever which is enjoyed by the consumers of London water depends largely on the effective working of the filters, it must be understood that a breakdown in the filtering arrangements might possibly, at any time, produce a serious epidemic. And although the ordinary process may remove 90 per cent. of the bacteria which are at present in the river water, it is reasonable to suppose that the remaining 10 per cent. of the bacteria may occasionally number in their midst the bacillus of typhoid fever.'

"As Sir William Crookes and Professor Dewar refer to their 'extensive experience,' I may be permitted to remind you that I have reported on the water supplied to St. George's, Hanover-square, for the last 25 years, and with regard to their remark that I seem to entertain a different view of the origin of typhoid epidemics from that generally held, I may mention that I have seen some hundreds of cases of typhoid fever and investigated some thousands in this and other countries during the past 30 years; that 25 years ago I combated the then prevailing opinion, advanced by Dr. Murchison, that the poison of the disease was produced by the decomposition of fæcal matter, that, in fact, it originated *de novo*; and that I have for a long time past come to the conclusion, which many others share with me, that typhoid fever spreads in other ways than by the pollution of drinking-water.

"I am, nevertheless, of opinion that such other ways are not competent to account for the increase of typhoid fever in London during the winter months, when it ought to diminish, and that there is in all probability some connexion between this increase and the fact that the greater part of London is then supplied with water which contains 'an excess of organic matter.'

"I will also add that it is at any rate a remarkable coincidence that I am able this month to report to you that the number of cases of typhoid fever in London has very considerably diminished and the death-rate from it gone down to its normal amount now that the water-supply has ceased to show the signs of contamination to which I have drawn attention." (April 11th, 1899.)

To this no further answer was received from the advisers of the water companies.

Mr. Shirley Murphy, in his annual report for 1894 as medical officer of health of the London County Council, drew attention to the fact that the distribution of cases of enteric fever in London "was characterised by the increase of prevalence in the forty-ninth, fiftieth, and fifty-first weeks," and that this late outbreak was exceptional and "was observable in the population supplied by all the London water companies except the East London and the Kent Companies. Also that the water supplied from the Thames and Lea was polluted owing to the fact that severe floods had occurred in November." He also states that: "Inquiry as to the behaviour of enteric fever in populations in the vicinity of the county gives indication of some difference of behaviour of this disease in the population supplied by water from the Thames and Lea and in the population otherwise supplied, the population supplied from these rivers experiencing an increase of disease in the forty-ninth, fiftieth, and fifty-first week, corresponding with that experienced in London. The hypothesis of water-borne contagion appears better able than any other to afford explanation of the increase of disease in the weeks in question."

I have no doubt from the above facts that the unseasonable prevalence of typhoid fever in November and December in London is due to the distribution of inefficiently filtered river water containing the poison of the disease, in sufficient amount, however, only to attack the most susceptible persons among the population.

Dr. S. Davies, the medical officer of health of Plumstead, reported in 1893 that the cases of enteric fever among the men employed in the Arsenal were caused by their habit of drinking water used for an engine and drawn from the Arsenal canal. This water is liable to be polluted with the excreta of labourers and is very liable to contain the infection of enteric fever. This reminds me of the account given by Dr. de Renzy of the prevalence of typhoid fever at Millbank Prison when it was supplied with water drawn direct from the Thames. On supplying the prison by means of an artesian well the disease became as rare there as it was frequent before.

In not a few instances—and some of them very important ones—the water-supply has become polluted while in the mains, whether on constant or intermittent service, by the specific poison of typhoid fever and serious outbreaks have been caused by it. Some of the more remarkable of these are the following. At Lewes (Sussex) Dr. Thorne reported in 1874 that there was a "large epidemic of enteric fever due in the first instance to pollution of the town water-supply from water drawn from the Ouse, which receives the town sewage, and mainly spread by suction of polluting matter into the water-pipes of an intermittent water service" (Report of the medical officer of the Privy Council and Local Government Board, New Series, No. IV., for 1874). He also reported as follows on an outbreak at Wolverton: "Water-supply exposed to risk of pollution by suction of foreign matters from closet-pans into mains of an intermittent service" (Report of the medical officer of the Privy Council and Local Government Board, New Series, No. VII., for 1875). And on another at Tideswell, Derbyshire: "Spread of disease favoured by conditions in an intermitting water surface allowing of suction of foul air into water-pipes" (Sixth Report of the medical officer of the Local Government Board for 1876). Dr. Thorne also reported on an outbreak in the Dewsbury registration district as follows: "Water-supply for some districts liable to pollution at its sources and periodically fouled in delivery mains during intermissions in the service." And again in the Dewsbury Urban Sanitary District: "Water-supply subject to pollution at, and probably on its course from, the gathering ground. Supply intermittent and liable to be fouled by suction of filth into mains (Eighth Report of the medical officer of the Local Government Board for 1878).

In 1874 Dr. F. R. Blaxall reported on an outbreak at Sherborne (Dorset) as follows: "The influence of milk in the distribution could be excluded, but respecting the circumstances of the water-supply the following facts were ascertained. During December, 1872, and January, 1873, the water was frequently shut off from the town at a point near to the reservoir and the same thing was done every night in February. It is known that when the water was shut off there were certain delivery pipes up which there was a rush of air immediately the tap was unscrewed. Now many of the openings to the pipes are situated in the pans of the water-closets. At night, after the closet had been used, the tap would be turned on for the admission of water; none flowing, the tap, in many instances, would not be turned off again; thus, a direct passage into the water mains would be left open, but the accidental circumstance of leaving the tap open was not required as many taps were broken and admitted a continuous flow of water during the day but at night, no water being present, were uninterruptedly open to sewer air. Through these openings during the night air commonly passed from the closet-pan to the water-pipe; in other words, the system of pipes for the water-supply became the means of ventilating the closet-pans; if a trap happened to be broken or out of order it became a means of ventilating the sewers, and if a pan happened to be full of excrement,

that excrement would be sucked into the water-pipe. In January and February, when there were at least 27 cases of enteric fever in the town, closet-pans thus circumstanced were doubtless in some instances tainted with the specific contagium of enteric fever; some may even have been filled with excrement from the bowels of fever patients. The sewer air which entered the pipes at night, when the water was turned off, would in the morning, when the water was turned on again, be driven forward, washing the pipe surfaces on which foul air had for hours been resting, and could hardly (even supposing no actual excrement to have got into the pipes) have failed to contain fever contagium; and this water went on, not only to cleanse closet-pans, but to be drunk by the people in the town. I think it probable that the recent outbreak of enteric fever was caused by persons drinking of this contaminated water and I base this opinion on the following considerations: first, the sudden appearance of so many cases in the first week in March—i.e., after the water had been shut off every night in February; secondly, by the gradual diminution of cases after the first week in March, during which month the water was not turned off at nights; thirdly, by the manner in which the cases were scattered about the town; lastly and mainly, by the fact that the proportion of cases occurring amongst persons who derived their water from the board of health supply was much greater than amongst persons who had their water from other sources" (Report of the medical officer of the Privy Council and the Local Government Board, New Series, No. II., for 1873).

In the same volume is a remarkable report by Dr. Buchanan on an outbreak which occurred in 1873 at Caius College, Cambridge, from which I extract the following: "All the more usual ways of enteric fever spread have now been considered and none of them have appeared adequate to account for the intensity of incidence of fever upon Caius College or for its remarkable incidence on Tree Court. Holding always in view the special character of these occurrences let us observe that the *water-supply* to the college is taken from a surrounding five-inch main at six different places, and that one of them, at the Gate of Humility, is for Tree Court and for no part but Tree Court. What if there should be something wrong with this one local supply? Even *primâ facie* there is something to be said for this view. The suddenness of the outbreak in the college was such as at once to suggest to Dr. Paget and Dr. Bradbury, and equally to myself, the thought 'that it might be due to the contamination of the water or milk.' The area of the particular water distribution is exactly the area of the fever, at least of 12 out of 15 cases, one or more of the remaining cases requiring probably no explanation beyond every-day circumstances. The good character of the company's general water-supply would not avail as an argument against a local contamination in a local service. And at an early period of my investigation I was struck with the circumstance that while every water-closet in the old part of the building was provided with a cistern proper to itself, the closets in the Tree Court buildings were supplied with water direct from the high-pressure constant-service pipes. Complete intermission of supply was found to have actually occurred on two occasions at least during the last term. The earlier occasion can be defined as the evening of the second day of an October frost, and thus far might have been either on Oct. 25th or on Oct. 30th, but other associations suggest Oct. 25th as being the more probable of the two days; on this occasion only the particular service through the Gate of Humility was stopped. The latter occasion was when the water company's servants, having, for the purposes of pipe repair, cut off the water-supply of some half of Cambridge, there was hurrying to restore the supply in order to gain water-power to blow the organ of King's College Chapel for a musical service. This fixes the date of the second known intermission at about 10.30 A.M. on All Saints' day, Nov. 1st. Now a fortnight is about the incubation time of enteric fever. A fortnight after Oct. 25th is the date of the first attack in Tree Court. A fortnight after Nov. 1st is the date of the second, third, and fourth attacks. And though it was known that other cases of fever kept dropping in till the end of November the coincidence of the early fever with these ascertained intermissions was not the less suggestive as indicating the direction that further inquiry should take." Dr. Buchanan then showed that the water in that main was contaminated by suction into it, during the periods of intermission of the supply, of foul air from a soil-pipe (and so from a sewer) through a "weeping pipe" which supplied the trap on the waste-pipe of the safe-tray of a water-closet, which trap was liable to siphonage. (Report of the medical officer of the Privy Council and the Local Government Board, New Series, No. II., for 1873.)

In the annual report of the medical officer of the Local Government Board for 1887 is an important report on an epidemic of enteric fever in the Mountain Ash Urban Sanitary District, Glamorganshire, by Mr. John Spear, in which, after discussing the evidence, Mr. Spear continues: "The facts all tend to bring into more and more prominent relief the point of *initial* contamination of the water, and, in view of the now clearly established premises of my argument, the exact condition of the Oxford-street main and its relation to immediate surroundings become matters of exceeding interest and importance. I have shown that the water, as it passed into the main and for the first 160 yards of its course there, produced no ill-effects in its consumers; and I have identified that point just at the Henry-street bifurcation as the one point indicated by the facts of fever prevalence where specific contamination of the water main had in all likelihood habitually occurred. For the purpose of this inquiry the two pipes were laid bare a little above and for some distance below the point indicated. The Henry-street pipe was laid some 25 years ago and has been found to be much corroded. That of Oxford-street was relaid, as I have said, in 1885. *There is no doubt that the relaying was very carelessly, not to say recklessly, done.* Owing to the exigencies of water-supply it was done mostly at night, and the work being in private hands was subject to no supervision on the part of any official or authority having concern with the public health. Accordingly, the main was carried, without any special precaution, *immediately above, alongside, and even through the old rubble drains:* and when in the course of trenching pipe-drains were cut through no trouble appears to have been taken to replace them. I find the inspector of nuisances reporting in September, 1885, a third case of injury and stoppage of a drain from this cause. Although the old stone culverts to which I have referred are not ostensibly sewage-carriers now they formed the sole sewage system some 20 years ago; and even now refuse matters are often poured, as I saw myself, into the roadside gullies that are connected with them. One of the culverts through which the Oxford-street main was carried (a 'collar' or junction between two pipes being in the interior was found to contain a quantity of excessively foul sewage deposit, a slaughter-house apparently, amongst other places, draining into it. It may be said that, as one result of the careless laying of the main, the latter was at different points from time to time bathed in refuse matters and habitually at certain points in sewage-contaminated air."

Leakages were found in the mains and also direct connexions with the water-closet pans. "Of course, during intermission of water pressure, the flaws in the pipes represented by the 'leaks' would afford means for the entrance into the pipes of air from the soil, or from the neighbouring drains as the case might be, and doubtless of liquid also. I had myself opportunities of observing how considerable was the suction of air into the pipes at certain points after intermission of supply and on its renewal how much air coming with much noise and force had to be expelled. No special valves being provided for the purpose this air must have entered by accidental openings. At any time of intermission it is plain that the leaky water-pipes were at liberty to discharge their contents through any opening at a lower level and that they would convey not only such water as remained in them but those matters also which entered at the points of leakage. In short, the leaky pipes would act as so many means of draining the ground in which they were placed. Passing through or alongside old rubble culverts they would take up foul air and liquid from these culverts and from the soil around and would deliver these matters at lower levels (if not during intermission, on the first renewal of supply) for consumption as 'drinking-water.' Intermission of water-current, however, is not by any means essential to the introduction of foreign matters into water-pipes. Under various physical conditions very powerful insuction of external matters into a full-flowing water-pipe can take place. Some of these conditions were considered in a departmental report on Croydon in 1875. It results from the foregoing observations that during intermissions of the service large contamination of the water of the Oxford-street and Henry-street mains must have

occurred and that contamination, although on a comparatively minute scale, during continuance of supply is probable. Chemical analysis of the water, and still more microscopical examination, afford important confirmatory results. Dr. Dupré, to whom samples were sent for analysis, reports that water taken from a house tap in Henry-street *before the nightly intermission of service* was pure, while that from the same tap after intermission gives evidence of animal contamination and of the appearance of low forms of life. Water from a tap in Victoria-street (Miskin) shows similar deterioration both in the night and morning supplies."

An interesting case at Buckingham in 1888 was reported upon by Dr. Franklin Parsons. There was a sudden outbreak of typhoid fever in that town in January and February, 1888, confined at first to a poor suburb of the town, and especially affecting persons drinking water from a particular "spout." "The water conduit to this spout was exposed to pollution from a leaky drain which had received specifically infected excreta from a previous case of enteric fever."

An outbreak of typhoid fever at Fareham (Hants) was reported by Mr. Spear in 1888 to have been traced by the medical officer of health "to pollution of an intermittent water-supply through numerous direct connexions between the water mains and the pans of water-closets. After this was remedied and a constant supply of water afforded enteric fever became less prevalent in the town." Mr. Spear also reported in the same year that an outbreak had taken place in Flint, where the water-supply was intermittent and where in the specially infected locality there was an "allegation of discolouration of the water when turned on in the morning." In 1889 Mr. Spear reported that at Strood and Rochester, where typhoid fever had been prevalent, he "found water-closets supplied direct from the mains—i.e., without the intervention of any cistern or tank. The danger of insuction of air and even of solid matter into the water-pipes from closet-pans during any temporary disconnexion of water-pressure is well known to attend this objectionable arrangement."

Dr. Wheaton reported in 1893 on an outbreak which was almost entirely confined to a limited area in the town of Atherstone (Warwick). The "outbreak was not due to excrement disposal, sewerage, drainage, or milk-supply; *but to the introduction nightly into the town water mains for a period of eight weeks of an extraneous water-supply which was subject to pollution.* The localisation of the fever outbreak was explained by the peculiar distribution of the water mains owing to which the suspected water was almost entirely consumed within the area to which the fever in question was almost entirely confined. The prevalence of the disease was in part due to infection from the privy-middens, also to contamination of water-supply by a residue of suspected water remaining in the mains and continued consumption of the same water, which was obtained from a public tap."

In 1899 Dr. G. S. Buchanan reported with regard to a serious outbreak at Falmouth (Cornwall) that there were "reasons for inferring that insuction of infectious matter into Falmouth water mains during periods of intermission of supply had concern with the epidemic." The water-pipe, in which there was a roughly made and leaky joint, was laid underneath the stones of a yard where the soil was "everywhere black and impregnated with foul organic matter." This was caused by the leaky drain and a water-closet down which typhoid excreta had been thrown, and Dr. Buchanan proved by a test that suction into this main actually did take place under certain circumstances.

There are very few instances in which sewage irrigation on land has been shown to be the cause of typhoid fever. It is indeed a remarkable fact that typhoid fever does not occur among the employés on sewage farms, even when they drink the water of wells on the farm, which is frequently the case. In some few instances, however, owing to mismanagement of some kind or other, outbreaks of typhoid fever have occurred in connexion with sewage irrigation. One was the outbreak at Beverley in 1884 already referred to.

We now come to the distribution of the disease by means of *infected milk*. In 1862 an investigation was made by Professor John Gamgee on Cattle Disease in Relation to the Supply of Meat and Milk and his report was published in the fifth report of the medical officer of the Privy Council. He came to the conclusion "that the cause at present operating most actively to deteriorate the milk of cows in this country is the prevalence of epizoötic aphtha. This disease attacks the human subject and many cases of communication from cattle to man have been observed either from the virus penetrating a wound or passing into the system with the milk." Sir John Simon adds to this: "Experiment seems to have established as certain that, at least under some circumstances, the human affection may be caused by the consumption of milk drawn from a diseased animal." And it is in a footnote that "more than 20 years ago Professor Hertwig published particulars of such experiments performed by him on himself and two friends with the result of producing a very definite eruptive fever."

Dr. Edward Ballard, when medical officer of health of Islington, first traced an outbreak of typhoid fever through milk-supply in 1870. This investigation is so important that I insert the following lengthy quotations from his report: "The general result of an inquiry into the milk-supply of the families within the quarter-mile radius into which I ascertained that typhoid fever had entered was this—viz.: That it occurred in the house of the milk vendor where the business, was carried on. He died and seven other persons, members of his family or boys employed and living on the premises, had typhoid fever and one of the latter died. That it occurred in the family of a person who dwelt in a small cottage in the cowyard distant about 100 yards from the last-mentioned house and dairy, three persons having fever here. The first case here was in a girl, who, a fortnight before she actually fell ill, had left a situation at a public-house supplied with milk from this dairy and since then had been residing at home. This family, the mother of the girl told me, rarely took milk, except on Sundays, being poor, but when the girl was ill milk was given to them from the dairy. The mother herself, and subsequently a little boy, had typhoid fever when the girl was convalescent. That, in addition to the two boys who had lived in the house for a longer or shorter time, two men engaged in the business who did not live in the house had typhoid fever. One of these was the cowman engaged after the master was taken ill; the other was a young man who worked at the cowyard and carried out milk and who took all his meals at a coffee-shop supplied from the dairy and where two families also supplied from the dairy had fever. That a fifth man employed at the cowyard and residing at home had fever. He also occasionally had his meals at the above-mentioned coffee-shop and his tea at his mother's who was supplied from the dairy. His family being poor he bought no milk for them anywhere and he was the only member of it attacked. That another single man residing within the radius in a wholesome house and engaged as a coachman outside the radius, who habitually took his meals at this same coffee-house, had an attack of typhoid fever. That (omitting the girl who came ill from the country) out of 62 other families within the district which are known to have suffered from typhoid fever, 54, or fully 87 per cent., were constantly supplied from the dairy with the milk they required, two were occasional customers, and five only stated that they did not deal there at all. I am not quite sure that complete reliance can be placed on this last statement; certainly I doubt it in one case of the five. All five resided close to the dairy and it is very probable obtained there, as the most convenient place, any extra milk their families required. In another instance a girl was attacked in a family not supplied by the dairy, but it appeared that on two consecutive days in the beginning of July she had taken tea with a schoolfellow who, with her mother, had typhoid fever a few days later, this family being supplied from the dairy. No one else in this girl's family had fever."

On inquiring into the fatal cases happening in families residing in the quarter-mile radius from the dairy he found, "That the members of 142 families were supplied with milk from the dairy in question. The district within the quarter-mile radius alone must contain over 2000 families. So, after all, no very considerable proportion got their supply from this source. Out of these 142 families (which include the dairyman's household) I have ascertained that 70 were invaded by typhoid fever within the 10 weeks during which the outbreak extended—that is to say, half of them were invaded. This includes all the families which had deaths from typhoid fever." On searching for the cause of the contamination Dr. Ballard found that it came from an underground wooden tank constructed 16 years before which had become rotten and was found to communicate with two old drains by means of rat-burrows in such a manner that not only foul air from the drains but also an overflow of sewage

itself could obtain access to the tank. The water from this tank was used for washing the milk-cans.

An outbreak at Balsall and Moseley Heath, near Birmingham, was investigated in 1873 by Dr. Ballard who thus sums up its etiology:—"1. Two wells upon adjoining premises occupied by milk-sellers became infected early in November with the infectious matter or virus of enteric fever through the soakage from a privy into them of excremental matters containing that matter of infection. 2. Through the medium of water drawn from these wells the milk supplied by these milk-sellers became infected and many of their regular customers who drank the milk suffered from the disease. 3. The same infected milk having been sold to two other milk purveyors, some of the persons using the milk supplied by these milkmen also suffered in a similar manner. 4. There is no evidence that the disease spread in these districts in any other way than through the consumption of these infected milks" (Report of the medical officers of the Privy Council and the Local Government Board, New Series, 1874).

A serious outbreak of typhoid fever in Marylebone was investigated in 1873 by Mr. J. Netten Radcliffe and Mr. W. H. Power, the former making the country inspections and the latter the inquiries in London. Mr. Radcliffe was also accompanied in his inspections by Dr. Whitmore, the medical officer of health of Marylebone, Colonel W. Hope, V.C., and Mr. Chalmers Morton, representing the company supplying the milk, and myself as medical officer of health of St. George's, Hanover-square, and also sanitary adviser to the company. "Early in the outbreak Dr Murchison, whose family suffered very severely from it, satisfied himself that the only probable mode of introduction of the disease into his house was by the milk-supply. The suspicion having been aroused, he quickly ascertained that almost the whole of the families which were then affected with enteric fever within his knowledge and that of his professional friends, obtained their milk from the same dairy which supplied his household. The preliminary inquiry had made it certain that the milk of six out of the seven farms supplying the dairy was, at the time of the outbreak, free from any suspicion of infection with enteric fever material. But with regard to the milk from the seventh farm the result was very different. Here a condition of things was found which rendered it highly probable that milk from this farm had been charged with enteric fever material and not improbably with the excremental discharges of a patient suffering from enteric fever, shortly before and during the earlier period of the outbreak in Marylebone. *From this farm was obtained all the milk specially supplied by the implicated dairy for nursery use, the consumption of which milk, as has already been shown, furnishes the strongest evidence of the infection of the milk.* On June 8th the occupier of the farm died suddenly in the fourth week of an attack of ambulant enteric fever (typhus ambulatorius). For some time previous to the seizure it had been suspected that he suffered from some disease of the heart. The suddenness of the death at a time when it was believed by his medical attendant that recovery from the enteric fever had commenced led to the death being ascribed to the presumed heart disease and to its having been certified as occasioned by this cause, no mention being made in the certificate of the disease from which he was considered to be recovering at the time of death. The history of this case, indeed, is that of well-marked ambulant enteric fever. Previously to the hæmorrhage there had been no disturbed action of the bowels. After the hæmorrhage Mr. Humphreys gave directions that all discharges from the bowels and bladder should be kept out of the common privy of the farmhouse and buried somewhere outside the premises. This direction was carefully carried out, and from the first hæmorrhagic stool to the last chamber slops all the discharges were removed to an ash-heap beyond the precincts of the farm buildings (as will presently be more fully described) and there the evacuations from the bowels were buried and the slops cast. No disinfectant was mixed with either the one or the other before being got rid of; for, on the one hand, it did not seem to be necessary from the place of burial or casting away, and, on the other, it was not advisable to retain upon the premises the great bulk of the evacuations passed within a brief period until a disinfectant had been procured. On August 12th, a son of the above patient, aged 13 years, was seized with enteric fever, and he passed through a slight but well-marked attack.

"A series of carefully executed excavations were carried out under the supervision of Colonel Hope, V.C., one of ourselves and the manager of the implicated dairy being also present, to determine whether soakage from the privy and from the drains of the farmhouse could find its way into the dairy well. A previous examination of the interior of the well, the water having been pumped out for the purpose as low as practicable, disclosed a well-marked line of soakage through the interstices of the brick steining on the south side of the well, three feet six inches above the inlet of the drain from the feeding well and nine feet from the surface. Other more doubtful points of soakage existed, which need not be described. These excavations proved conclusively (1) that no soakage was possible from the privy into the dairy well; (2) that no soakage had taken place either from the surface yard drain or from the dairy drain into the well; and (3) that no soakage from the farmyard drain or the farmyard or elsewhere had passed along the upper part of the trench in which the conduit from the well in the meadow to the dairy well was laid. These questions having been carefully put aside a trench was run up to the yard wall from the garden plot on the south side, a little to the east of the position of the well, and on digging beneath the foundation of this wall unquestionable signs of soakage of some foul matter were found. On this being discovered an excavation was made between the well and the yard wall and a line of soakage disclosed along the foundation of the wall through the made earth intervening between the wall and the well to the point where soakage had been discovered in the well. The reason of the growing foulness of the water from this well, which had caused its disuse some time before for drinking and cooking, now became at once obvious. The soakage could only come from one direction—that of the pigsty. The yard wall and the southern wall of the pigsty were continuous. The drainage of the pigsty flowed to the south side of the wall and there accumulated. The surface drainage from the yard was also occasionally dammed up against the wall, as one of us at the time of the first inspection of the premises had occasion to see. Now there can be no reasonable doubt, from the result of the excavations, that the drainage of the pigsties and of the yard had in the progress of time made its way along the foundation of the wall, a distance of about 25 feet, to the vicinity of the well and then soaked through the intervening soil into the well. The latter process from the nature of the soil would be a slow one, but it had been accomplished so effectually that the clay which constituted the bulk of the made ground between the wall and the well was, along the line of soakage, reduced to the consistence of very soft paste. Against the wall along the foundation of which this soakage takes place and close to the pool formed by the drainage from the pigsty is the ash-heap of the farm. In this ash-heap were buried all the evacuations from the bowels of the sick occupier of the farm on June 1st, 2nd, and 3rd, and upon it were cast all the chamber slops of the sick man's room from June 1st to 8th. *In other words, by an unhappy and altogether unforeseen chance and in carrying out precautions to obviate any possibility of mischief the matters from which mischief was most apt to arise were deposited in perhaps the only spot on the farm premises where they would certainly find their way into the water used for dairy purposes.*

"For the ultimate purpose of this inquiry it is sufficient to have shown a probability, amounting for practical purposes to a certainty, that (1) the outbreak of enteric fever which forms the subject of inquiry was caused by milk infected with enteric fever material; (2) that this milk came from a particular farm; and (3) that the water used for dairy purposes on this farm contained excremental matters from a patient suffering from enteric fever immediately before and at the time of the outbreak" (Report of the medical officer of the Privy Council and the Local Government Board, New Series, No. II., 1874).

In the seventh annual report of the medical officer of the Local Government Board, 1877, is a report on an unusual prevalence of enteric fever at Ascot during a period of four years and a half by Dr. E. Ballard, from which I quote the following: "In the middle of 1873, at the very time that the outbreak in Marylebone which was traced to the milk-supply of a particular dairy was in progress, three cases of enteric fever occurred almost simultaneously on the top of the ridge of hill on which the village of Ascot stands. .....

"The three cases occurred in persons who had recently been in London, *and two of whom had certainly when there used the milk of the particular dairy.* I failed to get

evidence of the third case having partaken of that milk." Dr. Ballard makes the following interesting observation :—

"*What is to be gathered from coincidences?*—In an inquiry into an epidemic such as this, where the cases of the disease are distributed about a district having certain common features, there are four sources which are ordinarily looked to as those whence the contagium of the disease is most likely to have proceeded and by the medium of which it may have been distributed, viz. : (1) a common source of water-supply, such as some particular well or stream or the mains of a system of public supply, in which case infection of the water, either at its source or in its progress for distribution, may result in the distribution with it of an infective material ; (2) a common system of drainage, in which case a sewer becoming infected may be the means of distributing, through the medium of the sewer air, infective matter to the houses in relation with such sewer ; (3) where there is no common water-supply and no common system of drainage to account for a wide distribution of fever, the cause of the spread may be found in the progressive infection of independent privies, &c., and by soakage from them into independent wells or other supplies of drinking-water ; or (4) the cause of the spread may be found in the distribution over the district of some particular article of food, such as milk, which has become infected."

Dr. Ballard then shows that the first three sources were not operating in this case, but that the fourth was, almost all the families infected being supplied with milk from a farm known as the Brick-kiln farm, and he comes to the following conclusion : "The facts which I have detailed can leave, I think, no doubt upon the mind that the use of milk distributed from Brick-kiln farm was in some way directly associated, as cause with effect, with the distribution of enteric fever through the Ascot and Sunninghill districts during the long period of four and a half years.[2] It is no valid objection to this inference to say that many families to which this milk was distributed have hitherto escaped invasion, and that a few families which used milk from other sources suffered similarly from fever. The obvious reply to the first of these objections is that in no milk epidemic hitherto investigated has more than a fraction (although usually a large fraction) of the families using the infected milk been invaded ; and to the second objection that the operation of one predominating cause of an epidemic of fever by no means precludes the operation of other causes concurrently existent." After describing the premises he adds : "The above account of the condition in which I found the farm and dairy premises, and of the slovenly arrangements under which the business was conducted, indicates more than one way in which the milk might have become befouled. It is obvious that the cans in which the milk was sent out were liable every day or any day to befoulment even during the process of cleansing. The water used for rinsing the cans was a dangerous water to use for the reasons just assigned, being doubly liable to befoulment—namely, first, from the soakage of foul matters into the well from privies and the manure heap, and, secondly, from the absorption of the foul emanations from the drains which communicated with the pump case. After rinsing they were again liable to befoulment from drain emanations rising through the sink pipe over which they were sometimes inverted to drain. And, finally, the milk itself might at any time have become befouled by standing in the room into which the sink pipe opened. In addition to all which the brush used in cleansing the cans and the rags used for the same purpose, or for plugging the pump spouts, might, from their constant vicinity to the sink pipe, have become fouled by the drain emanations and thus have become a medium by which these filthy emanations might have been conveyed to cans. With respect to the open cistern within the pump case I may point out that its circumstances were similar in all essential points to those of the water cisterns in many London houses, where the waste-pipe opening above into the space between the water and the cistern cover is continued without any break or intervening trap into the house-drain, and is liable to carry up sewer-air into that interval, whence it may be absorbed by the water. There is abundant evidence to show that enteric fever has, in London, been frequently caused by the use of cistern water stored under such conditions. I have specially mentioned the circumstances under which the water used may have introduced a filth pollution into the milk by merely rinsing the cans with it, because former experience of milk epidemics of fever have demonstrated that given an infected water the small quantity of such water which may hang about a milk-can after rinsing with it is amply sufficient to infect the milk subsequently put in. The infection of milk by an infected water by no means implies fraudulent dilution of the milk with that water, of which, moreover, there is no evidence in this instance. To all this I may add that there is an accidental way in which filth may gain access to milk, which must never be overlooked,—namely, from the hands of the milker." He then asks : "*Had the 'filth' that had access to the milk any opportunity of receiving specific infection?*—This is a further question some attempt to answer which will be expected by those who subscribe to the doctrine that (putting mere possibilities aside as not matters of scientific argument) enteric fever contagium as we now meet with it has an ancestry ; and however long and widely and through whatever media it may have travelled about prior to finding a lodgment suitable for its development in a human system, that it or its ancestor at one time issued with excremental matter from some individual affected with the disease. It is a doctrine which I myself provisionally accept as most in accord with my own experience and also, so far as I have been able to judge, with that of the most competent and, let me add, most patient observers. With such as dissent from it I can agree in admitting that there is very much in the natural history of contagium in general, and of enteric fever contagium in particular, wrapt in an obscurity yet unpenetrated ; but I am hopeful enough to look forward to the time when the advance of scientific inquiry will render that clear which is now dark."

Lastly, he made investigations on this important point and came to the conclusion "that there were various opportunities for the 'filth' thus introduced into the milk to become specifically infected with the infective matter of enteric fever." It is interesting to note that in the specification of works to be done at this dairy a brick dipstone trap (now quite obsolete) is specified and a sketch of it is given.

An outbreak at St. Albans in 1884, investigated first by Dr. C. E. Saunders, the medical officer of health, and afterwards by Mr. Shirley Murphy for the Local Government Board.—This was a simultaneous outbreak of typhoid fever in St. Albans and in London among the consumers of milk coming from a farm near the former city. Although the disease was undoubtedly traced to the milk, which must have been contaminated, there was an absence of evidence that the milk at the farm had become infected in any of the commonly believed ways, but there was "some reason for believing that the milk from this farm, which had in the summer of 1883 given rise to a serious outbreak of enteric fever in St. Pancras, had retained, although to a slight degree, power of infecting its customers in the interval between the two outbreaks." The great interest and importance of this conclusion are obvious.

Dr. Airy reported in 1885 that there was a severe outbreak of typhoid fever at Lower Sherringham (Norfolk) under circumstances pointing to contamination of milk-supply, but that the origin of the infection was uncertain.

Mr. Harvey reported in 1886 that epidemic typhoid fever at Swanage (Dorset) was "associated at its commencement with the use of milk from a dairy situated on the polluted brook and without water-supply on the premises."

In 1886 Dr. J. Ashburton Thompson, then an inspector under the Board of Health of New South Wales, presented a report on an outbreak of typhoid fever in the municipal district of Leichhardt, which he had traced to polluted milk and in which he draws the following conclusion as to the cause of the outbreak : "All possible causes have now in turn been examined. It has been shown that its attack and decline were alike sudden ; that it occurred at a time when the district affected by it was practically free from fever ; and that it was almost entirely confined to customers of a particular dairy, cases of fever among others than customers being very few, and two having had ample opportunity at least of sharing the milk. It has been shown further that these customers lived under general conditions which were equally shared by all the inhabitants of the district, their number being 615 and against very nearly 10,000 who were not customers. It has been shown, therefore, that the condition common to the persons attacked must have been one to which the persons who escaped were not subject ; and that the only condition answering to this requirement is the

[2] The low fatality which has attended the epidemic corresponds also with experience as to other epidemics of enteric fever due to milk, only two persons out of the 69 died.

consumption of milk supplied from the Helsarmel dairy to the former." At the dairy the well water was shown to be practically sewage and it was highly offensive at the time of calling—in fact, the sewage of a number of houses and the drainage water of a cemetery soaked into it, and Dr. Ashburton Thompson was able, moreover, to show that it was specifically infected from the excreta of a recent case of typhoid fever in the neighbourhood.

Dr. Page reported in 1888 that an outbreak of typhoid fever at Spennymoor (Durham) was associated in time with prevalence of fever at a farmhouse whence milk was distributed to a considerable number of the persons attacked. Dr. Bruce Low reported on an outbreak at Shildon and East Thickley (Durham) in 1893. There were scattered imported cases during May, June, and July, followed by a considerable outburst of the disease in August and September, the number of cases gradually diminishing in October and November. "The earlier cases were mild, anomalous, and irregular, the later cases typical and severe. Many cases admittedly escaped disinfection and established foci of infection." A large share in the diffusion of the disease was attributed to a particular milk service. "In the milk-seller's house there occurred three or four unnotified cases believed to have been enteric fever. The dairy where the milk was stored communicated directly with the sewer, without a bend or trap, by means of a four-inch pipe in the sink stone. History of flooding of milkman's cellar by sewage on two occasions in July after heavy rainfall. The public water-supply had nothing to do with the outbreak."

In 1895 Dr. Bruce Low reported on a sudden outburst of typhoid fever in August in the town of Helmsley, North Riding (Staffs.), confined to the customers of a particular milk-seller, a member of whose family recovering from this fever came on a visit to his house from July 11th to August 24th. The outbreak suddenly terminated in September on the stoppage of the sale of the polluted milk.

At the International Medical Congress of 1881 Mr. Ernest Hart read a paper on the Influence of Milk in Spreading Zymotic Disease in which he placed on record 73 outbreaks of disease as having been traced to the agency of milk, and of these no less than 50 were outbreaks of typhoid fever; and in 1897 he published another report on the same subject in the *British Medical Journal*, giving short accounts of 95 more outbreaks (occurring between 1882 and 1896), of which 48 were those of typhoid fever, making together 98 outbreaks of typhoid fever traced to the agency of milk by the end of the year 1896.

Dr. D. S. Davies, medical officer of health of the city of Bristol, read an important paper before the Epidemiological Society in March, 1898, on an Outbreak of Milk-borne Enteric Fever in Clifton. In this outbreak the cases varied from the mildest, which would not otherwise have been recognised as typhoid fever cases at all, to the severest type of the disease, mild and severe cases being found in the same houses. The outbreak, as is so often the case with those due to milk, showed an excess of attacks among children under 15 years of age. There were 244 cases in all, of which 230 "were shown to have obtained either regular or occasional supplies from one or other of the three infected rounds." Of the remaining 14 cases four were accounted for in other ways. The connexion of the fever with certain milk-supplies may be considered to have been established without a doubt.

In 1899 Dr. W. W. E. Fletcher reported on an outbreak at Coleford (Gloucestershire), which place was almost free from typhoid fever from 1895 to 1898, when an outbreak occurred which he found to have been "intimately connected with one particular milk-supply."

In May, 1900, Dr. Fletcher reported to the Local Government Board on an outbreak of typhoid fever in the Urban District of Coleford and in the Rural District of West Dean (Gloucestershire). Dr. P. Buchanan, the local medical officer of health, had already ascertained that "although the drainage and sewerage of the towns are highly unsatisfactory and the polluted state of the water-courses dangerous to health, the outbreak was caused by contaminated milk; there was some difficulty in ascertaining how the milk had become contaminated. It appears most probable to have been either by washing the milk cans with polluted water from a well or by the fact that one of the workers in the dairy suffered from a mild attack of typhoid fever and that the milk he distributed somehow became infected from him."

In the twenty-sixth report of the State Board of Health of Massachusetts for 1894 Dr. William T. Sedgwick reports on an outbreak at Marlborough as follows: "While a very brief investigation had established the fact that the epidemic could not possibly be attributed to the public system of water-supply or sewerage the true source of the outbreak still remained to be found and I next turned to the milk-supply as a possible vehicle of the disease. But it soon became plain that many different milkmen were involved and that therefore ordinary milk could not have been the common carrier of the infection. Closer inquiry, however, finally disclosed the fact that very nearly in the middle of the infected district was a 'creamery' which, although private, served in a manner as a milk-centre for the whole city. This creamery bought milk from 28 different farms which constituted its regular supply. It also bought from time to time from the various independent milk-peddlers whatever milk they had left over and wished to sell after their daily rounds. On the other hand, the creamery sold to the various milk-peddlers whenever their own supplies 'ran short' and in these ways served, as it were, as a kind of 'clearing-house' for the milk-supply of Marlborough. My suspicions at once rested, largely because of its central location among the cases, on the creamery and very soon after upon this special skimmed-milk service. I therefore made in the next place a house-to-house investigation which established beyond all possible doubt the fact that there was a common bond existing between most of the cases. It had not escaped observation that the disease was confined to those of slender means or in poor circumstances, and closer investigation showed that some who had attempted to economise in their milk-supply by using skimmed milk had suffered most severely." He ultimately satisfied himself that this skimmed milk was the cause of the epidemic and concludes his report with the following observations: "As far as I know the present is the first case on record in America in which an epidemic of typhoid fever has been apparently due to the use of infected skimmed milk; but it is easy to believe that many obscure outbreaks of this disease may have come from a similar source. With the multiplication of creameries to which milk (or cream) is brought from numerous and various farms the possibility must be kept in mind of contamination of the whole product by one infected contributory portion; and inasmuch as skimmed or 'separated' milk, on account of its cheapness and freshness, is now much used not only for cooking but also for drinking, this product, as well as the 'whole' milk, must henceforth be regarded as a possible vehicle of infectious disease."

Dr. Pistor of Berlin has kindly forwarded me copies of papers from which I extract the following:—

I. Dr. Ricken of Malmedy (Rhine Province), writing on Typhoid Fever and Dairies, cites several instances of outbreaks traced to polluted milk; thus at a place called Reuland a general distributing dairy for skim-milk was established in 1897, and an outbreak soon occurred producing 73 cases in 36 houses, with 10 deaths; of these 22 houses were supplied by the dairy; moreover, all the families of the employés of the dairy, except one, suffered from the disease and in each village where an employé lived it was in that family that the disease first broke out. At Büllingen a dairy was opened in April, 1899, and an outbreak soon occurred and was traced to the dairy having been supplied from four houses where there had been cases of typhoid fever shortly before. The results are stated as follows:—(*a*) Of 316 houses of customers of the dairy 48 were attacked, or 15·2 per cent. (*b*) Of 210 houses not served by the dairy 20 were attacked, or 9·5 per cent., while in one of the villages (Wirtzfeld) of 34 houses of customers of the dairy 10 were attacked, or 29·5 per cent., and of 50 houses not served by the dairy eight were attacked, or 16 per cent. Moreover, of the 116 cases in this village no less than 35 were children under 15 years of age. At Nidrum, in the district of Malmedy, an outbreak among the soldiers of the camp of Eisenborn which recently took place was traced to the use of infected milk, supposed to have been sterilised but evidently not efficiently so. The way in which the milk became infected was not traced but typhoid has been endemic in the district for some years. At Auro (district of Prüm in the Eiffel) in 1898 a widespread outbreak was attributed to skim-milk distributed from the dairy there, because all the cases occurred in houses supplied by that dairy. In 1899 another outbreak occurred at Bleialf in the district of Prüm and was traced to another dairy (Zeitschrift für Medizinalbeamte, Heft ii., 1901).

II. Dr. Schlegtendal of Aix-la-Chapelle has collected accounts of outbreaks traced to polluted milk-supplies in Strasburg, the Canton Lucerne, Connecticut, Montclair

New Jersey, Lübeck, Aix-la-Chapelle, Hamburg, and a number of other places; the one at Aix was particularly interesting as it was brought about by cases in the house of a dairyman, which were called by the medical attendant "gastric fever" and were not notified to the public authority and therefore no precautions were ordered; the excremental matters of the patients were thrown on a dung-heap from which they soon soaked into the well, the water of which was used to wash the milk-cans. The outbreak ceased on disuse of the well-water and connexion of the dairy with the town water-supply. The circumstances of this outbreak were very similar to those of the Marylebone outbreak in 1873 (Deutsche Vierteljahrschrift für Öffentliche Gesundheitspflege, vol. xxxii.).

III. Dr. J. Adolf Kraemer gives a very interesting account of an outbreak in an infantry regiment. Tired out by a long march in July and very thirsty the soldiers came to a place where they were given plenty of milk. The result was that 142 of them fell ill about the end of the second or beginning of the third week after drinking the milk; of these "81 had true typhus abdominalis, 31 febris typhosa sive gastrica, and 30 had indefinable symptoms." It appeared that in the house whence the milk was obtained there was a person suffering from typhoid fever and this case was at first regarded as the source of the outbreak, but it was found afterwards that it was contracted at about the same time as the cases among the soldiers and the poison appears to have been derived from a case which occurred in the previous year (Zeitschrift für Klinische Medicine).

THE

SURGICAL TREATMENT OF OBSTRUCTION IN THE COMMON BILE-DUCT BY CONCRETIONS,

WITH ESPECIAL REFERENCE TO THE OPERATION OF CHOLEDOCHOTOMY AS MODIFIED BY THE AUTHOR, ILLUSTRATED BY 60 CASES.[1]

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WHEN once gall-stones have reached the common duct, their attempted dislodgment by purely medical means is with few exceptions disappointing in the extreme and the unfortunate patients are condemned to a lingering and painful illness, usually ending in death, unless the obstruction can be removed by surgical intervention. Seeing that it is only 11 years since Courvoisier first removed a gall-stone from the common duct by direct incision the progress in this branch of surgery must be very pronounced when we can safely affirm that there is no portion of the gall-bladder—cystic, common, or primary division of the hepatic ducts—which cannot under ordinary circumstances be reached for the removal of concretions and that with great probability of success.

No surgeon should attempt the removal of gall-stones unless he is prepared for any of the various operations on the biliary passages, as it is almost impossible to say beforehand what may be required until the ducts have been explored by the fingers and the condition of the parts ascertained, and no operation should, as a rule, be concluded until it is clearly made out that the ducts, including the hepatic and common ducts, are quite free from concretions, otherwise disappointment and dissatisfaction are certain to follow.

Arguing from some hundreds of cases of cholelithiasis on which I have operated I find that the common bile-duct has to be attacked in one out of every five or six cases. In a few cases concretions may be manipulated backwards into the gall-bladder and thence extracted by scoop or forceps, but this can only be done when the cystic duct is dilated. I have been able to clear the ducts in this way on 10 occasions. Occasionally a small stone may be pressed into the duodenum, but this is exceptional and inadvisable, as it may be pushed into the diverticulum of Vater and so be missed and the whole operation rendered futile. In patients too old or too ill to bear choledochotomy a rapid cholecystotomy may be performed so as to relieve the jaundice and allow solvent injections to be employed, but my experience of this treatment has not been so favourable as to make me very hopeful of accomplishing the solution or the diminution to the passing point of the concretion deliberately left behind and a subsequent operation is usually necessary.

Crushing concretions by means of pressure by the finger and thumb through the duct walls is a method which I formerly employed in over 30 cases with considerable success and without fatality, but it is only available for soft concretions, and fragments are apt to be left and then to produce further trouble. I have not once adopted this method during the past two years unless I could at the same time remove the fragments.

Cholecystenterostomy or short-circuiting the obstruction should never be performed for gall-stones as it leaves the cause untouched and the small opening is apt to contract and to lead to speedy recurrence of the symptoms. This has actually occurred in my own practice and in that of other surgeons. Out of nearly 30 cholecystenterostomies that I have performed I have only done it on 10 occasions for gall-stones and not once during the past two years.

If the patient be too ill for choledochotomy the gall-bladder can be very rapidly united to the colon with very little disturbance of adhesions, and this as a means of giving relief answers quite as well as the more difficult operation of uniting the gall-bladder and duodenum; this operation is, however, only applicable when the gall-bladder is dilated, which is unusual in cholelithiasis.

The operation of uniting a dilated duct to the intestine or draining a dilated duct on to the surface may be occasionally called for and I have twice done the former and once the latter operation and in all the cases recovery followed.

Reaching the common duct through the opened duodenum, a modification of choledochotomy, seemed to me when it was first suggested by Dr. McBurney an easy and ideal operation and at that time it was easier than ordinary choledochotomy, but I feel sure that there is a greater danger of sepsis by this method owing to the necessary enterotomy, and since I have adopted my modification of choledochotomy I have not repeated the operation through the duodenum, since I am quite clear that it is not only more difficult and more dangerous, but that it does not afford so great a facility in clearing the whole of the ducts of concretions. I have performed it 11 times with three fatalities, which compares unfavourably with the ordinary operation of choledochotomy.

Lastly, and most important, we come to the ideal operation for the removal of stones from the common duct, choledochotomy, which, after experience of all other methods in vogue for the removal of gall-stones from the common duct, I have come to the conclusion is the only one to be relied upon and as an operation is therefore worthy of special study. Moreover, as the result of my experience in 60 cases I have been able to modify the operation in such a way that what was formerly a most difficult procedure, involving prolonged manipulation, special appliances, and at least two assistants, and only to be undertaken after all other means had failed, is now a comparatively simple operation in the greater number of cases, only requiring the help of one assistant and not requiring the use of any special apparatus. By this method the time involved in the operation is reduced considerably, and where adhesions do not give unusual trouble it is easy to complete the work in from 30 to 40 minutes, which not only means a saving of time and fatigue to the operator but a considerable saving of shock to the patient. I always employ a firm sandbag under the back opposite to the liver, which not only pushes the spine and with it the common duct forward so that it is several inches nearer the surface, but acts like the Trendelenburg position in pelvic surgery by letting the viscera fall away from the field of operation. I then make a vertical incision over the middle of the right rectus, the fibres of which are separated by the finger, which I find to be the most expeditious and the most effective method of exposing the gall-bladder and bile-ducts; but when it is necessary to open either the common duct or the deeper part of the cystic duct, instead of prolonging the incision downwards, as was formerly done, I now carry it upwards in the interval between the ensiform cartilage and the right costal margin as high as possible, thus exposing the upper surface of the liver very freely. It will now be found that by lifting the lower border

[1] A paper read before the Royal Medical and Chirurgical Society on March 25th, 1902.

of the liver in bulk (if needful, first drawing the organ downwards from under cover of the ribs) the whole of the gall-bladder and the cystic and common ducts are brought quite close to the surface, and as the gall-bladder is usually strong enough to bear traction, the assistant can take hold of it by fingers or forceps and by gentle traction can keep the parts well exposed, at the same time that, by means of his left hand with a flat sponge under it, he retracts the left side of the wound and the viscera, which would otherwise fall over the common duct and impede the view. It will now be observed that instead of the gall-bladder and cystic duct making a considerable angle with the common duct an almost straight passage is found from the opening in the gall-bladder to the entrance of the bile-duct into the duodenum, and if adhesions have been thoroughly separated, as they should always be, the surgeon has immediately under his eye the whole length of the ducts with the head of the pancreas and the duodenum. So complete is the exposure that if needful the peritoneum can be incised and the common duct can be separated from the structures in the free border of the lesser omentum, but this is not necessary except where a growth has to be excised. The surgeon, whose hands are both free, can now with his left finger and thumb so manipulate the common duct as to render prominent any concretions, which can be cut down on directly, the edges of the opening in the duct being caught by pressure forceps. The assistant can now take hold of the forceps with his left hand, as that instrument with the sponge will form a sufficient retractor since the duct is so near the surface. When the duct is incised there is usually a free flow of bile which it must be remembered is probably infective, but a sponge in the kidney pouch and rapidly mopping up the bile as it flows by means of sterilised gauze pads avoid any soiling of the surrounding parts, and if thought necessary the bulk of the infected bile can be drawn off by the aspirator either from the gall-bladder or from the common duct above the obstruction before the incision into the duct is made. After removing all obvious concretions the fingers are passed behind the duodenum and along the course of the hepatic ducts to feel if other gall-stones are hidden there, and a gall-stone scoop, the only special instrument that I use, is passed quite up into the primary division of the hepatic duct in the liver and quite down to the duodenal orifice of the common bile-duct, and, if thought necessary to insure the opening into the duodenum being patent, a long probe is passed into the bowel. The incision into the bile-duct is now closed by an ordinary curved round needle held in the fingers without any needle-holder, a continuous catgut suture being used for the margins of the duct proper and a continuous fine green catgut or spun celluloid thread being employed to close the peritoneal edges of the gut. In such cases, where the pancreas is indurated and swollen from chronic pancreatitis and is likely to exert pressure on the common duct for a time, I insert a drainage-tube directly into the duct and close the opening around it by a purse-string suture, the tube being fixed into the opening by a catgut stitch which will hold for about a week, but where this is not done I usually fix a drainage-tube into the fundus of the gall-bladder in the same way, as this drains away all infected bile and avoids pressure on the newly-sutured opening in the duct.

So easy is it to remove impacted stones after this method of exposure that I now never spend a long time in manipulating stones impacted deeply in the cystic duct, but at once incise the duct, remove the concretions, and close the opening without damaging the duct by much pressure and prolonged manipulation. Although there is seldom any fear of leakage or of infection, yet, owing to the separation of extensive adhesions, there is usually some tendency to pouring out of fluid in the first 24 hours. I therefore generally insert a gauze drain through a split drainage-tube, bringing it out either through a stab wound in the loin or forwards by the side of the gall-bladder drain. The wound is closed in the usual way by continuous catgut sutures, first to the peritoneum and deep rectus sheath, next to the anterior rectus sheath, and, lastly, to the skin.

To those having little experience in this operation the modification which I have employed may seem trivial, but to those who have experienced the difficulties of the ordinary operation I feel sure that the method which I have described, which enables the whole of the bile passages to be dealt with as a straight tube close to the surface, will be sufficiently appreciated. But the technique of the operation is not the only important part of the treatment of these various cases, which require thought and care not only before and at the time of, but subsequently to, operation.

A careful study of the causes of mortality in operations on the common duct shows that hæmorrhage, either immediate, consecutive, or secondary, cannot be ignored as a danger, and that shock apart from hæmorrhage has next to claim our attention. Sepsis is no longer the bugbear that it used to be, thanks to a rigid all-round asepsis, the employment of gauze drainage, and the careful avoidance of soiling the wound by infected bile. Although there is a greater tendency to bleeding in chronic jaundice from pancreatic disease than when jaundice is due to gall-stone obstruction I think there can be no doubt that in all cholæmic conditions the blood becomes so altered that the coagulability becomes seriously diminished and that these factors demand serious attention before any operation is undertaken in cases of common duct cholelithiasis. After reading Professor A. E. Wright's researches on the coagulability of the blood published in the *British Medical Journal* of Dec. 19th, 1891, my mind was prepared to grasp the possibility of turning the experience gained on dogs to practical uses in the human subject, as I had lost two jaundiced patients, one in 1888 and one in 1890, from persistent oozing of blood subsequently to operation. I therefore at once began to employ it in these cases and with benefit, but it has been only within the last two years, since using chloride of calcium in apparently heroic doses, that I have been able to get at the real value of the drug, which is the one I now always employ in the cases of jaundiced patients, both before operation in 30-grain doses by the mouth and afterwards in 60-grain doses by the rectum thrice daily for several days. The following case reported by Dr. W. Gough affords a good example of its utility.

A married woman, aged 38 years, was admitted to the Leeds General Infirmary on Jan. 23rd, 1901. She had had typhoid fever in September, 1899, and had never been quite well since. Shortly afterwards she began to suffer from biliary colic, though she had never been jaundiced till six months before admission, from which time jaundice had never left her. On Dec. 24th, 1900, she became much worse and had very severe paroxysmal pain, accompanied by shivering and profuse sweats. From that time she lost weight very rapidly and the jaundice deepened. On admission the liver could be felt below the ribs and there was a distinct fulness on deep palpation in the region of the pancreas. From Jan. 21st to the 31st she took calcium chloride in 20-grain doses thrice daily. Duodenocholedochotomy was performed on the 31st. There was very little bleeding. A stone nearly as large as a pigeon's egg was removed from the ampulla of Vater, which was laid open over a director introduced through the papilla at its opening into the duodenum. The head of the pancreas was felt to be much enlarged and hard. The incision into the ampulla was not sutured and through it the common bile-duct, very much dilated, was explored by the finger. The anterior wound in the duodenum was then sutured and the abdominal wound was closed. A drainage-tube was inserted through a stab wound in the right loin. The patient inadvertently did not have calcium chloride given in the nutrient enemata as is usual in these cases. She did well till the morning of Feb. 2nd, when the nurse noticed at 3 o'clock that the dressings were soaked with bright blood. The drainage-wound was exposed, but no hæmorrhage was occurring there. On examining the abdominal incision blood was seen to be slowly oozing from it and from the stitch punctures. One drachm of calcium chloride was administered at once by the mouth and three stitches were removed; the surface of the wound was then seen to be oozing all over. It was packed with gauze soaked in tincture of hamamelis and a firm dressing was applied. One drachm of calcium chloride was given again in two hours and afterwards it was repeated in 30-grain doses every two hours for six times, the drug being then given thrice daily. There was no recurrence of hæmorrhage and the patient made an uninterrupted recovery. The drainage-tube was removed on the 4th and she returned home within the month. An examination of the blood showed a very marked diminution in the blood-plates.

I think that it is important to ligature all bleeding points and not to trust simply to forcipressure, and while in non-jaundiced patients adhesions may be simply separated, in these cases I prefer to divide adhesions between ligatures where practicable. Where there is persistent oozing of blood from innumerable points, a tampon of sterilised gauze forms

a useful means of hæmostasis and this may be made more efficient by employing at the same time a solution of suprarenal extract to the bleeding surfaces.

The best treatment of shock is preventive and to that end it is desirable to lose as little blood as possible, though I do not agree with those who assert that shock in operation is always dependent on loss of blood. The patient is enveloped in a roughly-made suit of Gamgee tissue and where he is very feeble or the operation is likely to be prolonged it is performed on a heated table. A large enema of normal saline solution, with or without stimulant, given from 15 to 20 minutes before, and the administration of 10 minims of solution of strychnia subcutaneously just before commencing anæsthesia, are useful. Expedition in operating is an important factor in lessening shock, especially in abdominal surgery, for it stands to reason that prolonged manipulation and exposure of the viscera in patients so ill as are those composing the class of cases which we are now considering must generally be, will be badly borne, for it is not only the work of the surgeon, but the deep anæsthesia, that adds to the shock, since for choledochotomy to be well and expeditiously performed the muscles must be well relaxed. Choledochotomy should occupy from half an hour to an hour and in case of unusual complications a little longer, but it seems to me that the surgeon who spends two, three, or four hours over one operation is lacking either in skill or in judgment. After the operation a pint of saline fluid with one ounce of brandy is given by enema and five minims of solution of strychnia are given subcutaneously every two hours for several hours if called for. Subcutaneous injections of saline fluid or intravenous infusion are only rarely required.

As I have performed the operation of choledochotomy for the removal of gall-stones from the common duct on 60 occasions it would be too tedious to read even a short abstract of them all. I shall therefore refer those who wish for more detail to the second edition of my book on "Diseases of the Gall-bladder and Bile Ducts," where an account is given of all my cases, 28 in number, operated on up to Dec. 31st, 1899, and to the list of cases, 32 in number, operated upon since Jan. 1st, 1900. It is interesting to note that the mortality of the whole series of 60 choledochotomies is 16·6 per cent., or excluding the duodenocholedochotomies 14·2 per cent., but while those operated on before 1900 give a rate of 23·8 per cent. those since Jan. 1st, 1900, show only 7·1 per cent. of deaths, and of the two fatal cases one was from heart disease and the other from pulmonary congestion and shock, both deaths I believe being essentially due to ether anæsthesia, the ether having been given by means of the old apparatus with an india-rubber bag, a method which I have discarded on account of its asphyxial tendency and its want of cleanliness. I think, therefore, that it is quite reasonable to assume that with due precautions the mortality of the operation of choledochotomy should be reduced to 5 per cent. or under.

A SUMMARY OF A SERIES OF 60 CHOLEDOCHOTOMIES.

Cases 1 to 21, inclusive, which were operated upon before 1900, have been previously reported; in 16 of these recovery ensued.

CASE 22.—The patient, aged 50 years, was seen by me with Dr. J. T. Windle of Ovenden. There had been gall-stone colic for two years and three months. There was loss of flesh and of strength. Jaundice and infective cholangitis were present. A stone was floating in the common duct and there was a fistula between the gall-bladder and the colon. The operation was performed on Jan. 28th, 1900. The stone was removed from the common duct, the fistula between the gall-bladder and the colon was closed, and a good recovery followed. The patient was quite well in September, 1901.

CASE 23.—The patient was a married woman, aged 44 years, who was seen by me at the General Infirmary, Leeds. There was a history of gall-stones of 14 years' duration and of great failure in health. There was jaundice which was intensified after each seizure. The operations of choledochotomy and cholecystotomy, which were carried out on March 29th, 1900, resulted in a good recovery. The patient was well in 1901.

CASE 24.—The patient was a man, aged 52 years, whom I saw with Mr. W. H. Ellis of Shipley. There was a history of "spasms" lasting for some years and in later years of jaundice and infective cholangitis. There was a stone floating in the common duct. Jaundice and infective cholangitis were present. Choledochotomy and cholecystotomy were performed on June 7th, 1900, and a good recovery followed. The patient was well in July, 1901.

CASE 25.—A woman, aged 54 years, who was seen at the General Infirmary, had had colic two years previously followed by jaundice. There had been several severe attacks since with ague-like seizures and loss of weight. There were five stones in the common duct. Choledochotomy and cholecystotomy were performed on August 22nd, 1900. A good recovery resulted and the patient was well in December, 1901.

CASE 26.—I saw the patient, a man, aged 56 years, with Dr. A. G. Barrs of Leeds. He had been troubled with diarrhœa and indigestion for 25 years. The first attack of gall-stone colic and jaundice had occurred six months previously. One stone was ulcerating through the gall-bladder and one was in the common duct. There was muco-pus in the ducts. Suppurative cholangitis was present. Choledochotomy and cholecystotomy were carried out on August 22nd, 1900. Posterior drainage was employed, but recovery was tardy. The patient has been well since except for occasional attacks of pain.

CASE 27.—This patient, a woman, aged 43 years, I saw with Mr. G. A. Davies of Newport, Mon. She had suffered from colic for six years and from jaundice for two months. Two recent colicky attacks had been followed by fever and rigors. There were jaundice and infective cholangitis and a stone in the common duct. Choledochotomy was performed on Oct. 26th, 1900. A rough stone was removed. Anterior drainage was adopted. After a severe attack on July 19th, 1901, another stone was passed. The patient was very well in November, 1901.

CASE 28.—The patient, a woman, aged 45 years, who was seen at the General Infirmary, had had colic for eight years. Jaundice was present and was increased after each attack. Choledochotomy and cholecystotomy were performed. Several gall-stones were removed from the gall-bladder and the common duct and a good recovery followed.

CASE 29.—A man, aged 52 years, who was seen at the General Infirmary, had had symptoms for 20 years—"pains, &c." There were infective cholangitis with loss of flesh and strength, a fistula between the gall-bladder and the duodenum, intense adhesions, and jaundice. Choledochotomy with closure of the fistula and cholecystotomy were carried out on Feb. 15th, 1901. The patient took ether badly, became livid and had much mucus in the bronchi. He died from shock and congestion of the lungs.

CASE 30.—The patient was a woman, aged 50 years, whom I saw with Dr. H. Mitchell of Cockermouth. She had suffered from attacks of colic over a long period of time. Jaundice was moderate. There was a fistula between the gall-bladder and the duodenum. There were two stones in the gall-bladder and one stone in the common duct. Choledochotomy and cholecystotomy were proceeded with on Feb. 6th, 1901. The fistula was repaired. Complete and perfect recovery ensued and the patient was well in September, 1901.

CASE 31.—A woman, aged 57 years, was seen by me with Dr. F. R. Mallett of Bolton. There had been many attacks of colic, and jaundice had prevailed for three weeks. There were rapid loss of flesh and jaundice. There were a stone in the common duct and one in the gall-bladder. The gall-bladder was calcareous, forming a hard tumour. Choledochotomy and cholecystectomy were performed on June 8th, 1901, and a good recovery followed, the patient being very well in November, 1901.

CASE 32.—A woman, aged 40 years, was seen by me with Dr. F. W. A. Godfrey of Scarborough. For three years she had suffered from colic and jaundice. Jaundice and infective cholangitis were present and there were eight stones in the gall-bladder and one in the common duct. Choledochotomy and cholecystotomy carried out on June 17th resulted in a good recovery. The patient was very well in November, 1901.

CASE 33.—I saw this patient, a woman, aged 48 years, with Dr. T. Wakefield of London. Colic had persisted for one year and there was jaundice. There was a fistula the result of a previous operation performed elsewhere in October, 1900, when two stones were found in the cystic duct. There was also a biliary fistula. Slight jaundice and rigors occurred if the fistula was not kept patent. On July 1st, 1901, choledochotomy was performed with excision of the fistula. Two stones were found in the common duct. A good recovery followed and the patient was very well in November, 1901.

CASE 34.—A single woman, aged 28 years, whom I saw with Dr. J. Altham and Dr. J. Graham of Cockermouth, had suffered from spasms for years. For 25 weeks colic and jaundice had been present. On July 24th, 1900, duodeno-choledochotomy had been performed, when three stones were removed. The wound healed, but it reopened after an attack of pain followed by rigor. The patient returned on July 6th, 1901, suffering from jaundice, and there were a biliary fistula and infective cholangitis. Choledochotomy was performed on this date, one gall-stone being removed. The biliary fistula was excised and a good recovery ensued, the patient being well in November, 1901, except for a small sinus, not biliary.

CASE 35.—A woman, aged 30 years, was seen by me with Dr. F. C. Sprawson of Blackpool. Cholecystotomy for gall-stone colic followed by jaundice had been performed in February, 1900, by a surgeon since deceased. There was a biliary fistula, with jaundice if the fistula was not kept patent. Choledochotomy was performed on July 20th, 1901, when one stone was removed from the common duct. Cholecystotomy was also carried out, the case ending in a good recovery, and the patient was well in November, 1901.

CASE 36.—The patient, a woman, aged 38 years, had a history of spasms, infective cholangitis, and jaundice extending over some years. There were high temperature and incessant vomiting for a week before operation. The patient was extremely feeble. There were infective cholangitis, vomiting, heart disease, and deep jaundice. Choledochotomy was performed on July 21st, 1901, and several stones were removed from the common duct, but death from shock and heart failure resulted. The patient took ether badly, becoming very livid and almost pulseless.

CASE 37.—A man, aged 40 years, whom I saw with Dr. C. H. Taylor of Derby, had had indigestion and pain for a year. There had been loss of weight and deep jaundice for five weeks. There were five stones in the common duct and 35 in the gall-bladder. Choledochotomy and cholecystotomy were carried out on July 30th, 1901. Lumbar drainage was employed. The patient went home with a small tube in the sinus. He had lost his jaundice and otherwise was well in January, 1902.

CASE 38.—The patient, a single woman, aged 45 years, was seen by me with Dr. N. Williams of Harrogate. There had been gastric ulcer for two years. Colic and jaundice were present. There was loss of weight and of strength. There was pyloric stenosis with dilatation of the stomach. There were 20 gall-stones in the gall-bladder and two in the common duct. Choledochotomy, cholecystotomy, partial cholecystectomy, and pyloroplasty, which were carried out on August 5th, 1901, resulted in a good recovery, and the patient was well in November, 1901.

CASE 39.—A man, aged 46 years, was seen by me with Dr. R. H. Luce of Derby. For four months colic and jaundice had been present and there was loss of weight. The jaundice was very deep indeed. There were one stone in the common duct and two stones in the gall-bladder. The pancreas was swollen. Choledochotomy and cholecystotomy were performed on August 8th, 1901. Lumbar drainage was employed. The patient was well in November, 1901.

CASE 40.—I saw this patient, a man, aged 62 years, with Dr. J. Lawrence of Darlington. For two years colic had persisted and for a year jaundice had been present. Loss of weight to the amount of five stones was complained of. Cholecystenterostomy had been performed previously by another surgeon with temporary improvement. Relapse and recurrence of jaundice with great loss of flesh and of strength had taken place. Jaundice was present; there were three stones in the common duct and many in the gall-bladder, and there was cancer of the head of the pancreas. Choledochotomy and cholecystotomy were performed on August 8th, 1901. Anterior drainage was adopted. The patient was relieved of the pain and jaundice and he returned home within the month. Gradual loss of strength due to cancer of the pancreas ended in death in October, 1901.

CASE 41.—A single woman, aged 50 years, seen by me with Mr. J. C. Wilson of Haworth, had had spasms and jaundice for years. There were ague-like attacks, loss of flesh, infective cholangitis, and jaundice. There were one stone in the gall-bladder and five stones in the common duct. Choledochotomy and cholecystotomy were proceeded with on Sept. 1st, 1901. Lumbar drainage was employed. The patient was well in November, 1901.

CASE 42.—The patient, a woman, aged 47 years, was seen by me at the General Infirmary. For five years she had suffered from colic and jaundice with ague-like seizures. The jaundice was intensified after each attack. Choledochotomy and cholecystotomy, performed on Sept. 17th, 1901, resulted in a good recovery and the patient was well in December.

CASE 43.—A married woman, aged 38 years, was seen by me at the General Infirmary. She had suffered from colic from February to June, 1900, with jaundice and signs of suppuration. Cholecystotomy and draining the abscess between the gall-bladder and the intestine had been carried out. Some gall-stones had worked back from the common duct. There was colic again two months later, with persistent jaundice and infective cholangitis. Choledochotomy and cholecystotomy were performed on Sept. 27th, 1901. One stone was removed. A good recovery followed and the patient was well in December, 1901.

CASE 44.—I saw the patient, a man, aged 51 years, with Mr. W. C. D. Hills of Upwell, Wisbech. There had been slight colic but deep jaundice for a year and great wasting. There was infective cholangitis. There were five stones in the common duct. Choledochotomy was performed on Sept. 29th, 1901. The duct was drained and a lumbar drain was also used. There was chronic pancreatitis. The patient was very well and he had gained one stone and three pounds in weight in November, 1901.

CASE 45.—The patient, a man, aged 53 years, who was seen by me at the General Infirmary, had had colic for 12 years and jaundice for two years. There was deep jaundice. On Oct. 10th, 1901, choledochotomy was performed and a stone was removed. The patient was well in December, 1901.

CASE 46.—A man, aged 58 years, was seen by me with Dr. C. S. A. Rigby of Preston. He had had very deep jaundice for three years. Biliary cirrhosis and ascites as well as jaundice were present. There was a stone in the common duct. There were cirrhosis of the liver and ascites. On Oct. 21st, 1901, choledochotomy was performed. The omentum was fixed to the anterior abdominal wall. Anterior drainage was employed. In December, 1901, I had a letter to say that he was regaining strength and feeling well.

CASE 47.—The patient, a woman, aged 46 years, was seen by me at the General Infirmary. There was a history of spasms years before, and for the last eight months there had been very little pain but the temperature rose to from 103° to 105° F. every night. Jaundice and infective cholangitis were present. Choledochotomy was performed on Nov. 7th, 1901. The temperature dropped to normal on the day of operation and remained normal. The patient is now well.

CASE 48.—The patient, a single woman, aged 52 years, was seen by me with Mr. C. Brook of Lincoln. There had been spasms for years and jaundice for four months. The pancreas was large. There were 65 calculi, including 18 in the common duct. Choledochotomy and cholecystotomy, performed on Nov. 30th, 1901, resulted in a good recovery.

CASE 49.—I saw the patient, a man, aged 48 years, at the General Infirmary. He was a stout, unhealthy subject, with a history of former intemperance. He had suffered from gall-stones for 20 years and from jaundice with infective cholangitis since May, 1901. On Dec. 7th, 1901, choledochotomy was performed. 126 gall-stones were removed from the gall-bladder and 88 from the common and hepatic ducts. Recovery was retarded by bronchitis, but the patient was discharged well in five weeks.

Duodeno-choledochotomies.—Seven cases (Cases 50 to 56, inclusive) operated upon before 1900 with five recoveries have been previously reported.

CASE 57.—A married woman, aged 34 years, was seen by me with Mr. G. E. Coleman of Hemsworth. For many years she had had colic. There was intermittent jaundice. Cholelithotrity had been performed in February, 1891, and the patient was well in 1896. Then came recurrence of pain with jaundice and ague-like attacks. Dense adhesions rendered operation very difficult. Only débris came away. The pancreas was large. On July 23rd, 1900, duodeno-choledochotomy was performed. The gall-bladder was drained, but no lumbar drain was used. The patient died on the sixteenth day from exhaustion due to a leaking duodenum.

CASE 58.—I saw this patient, a single woman, aged 28 years, with Dr. Altham and Dr. J. Graham of Cockermouth. She had suffered for 25 weeks from colic and for 14 weeks jaundice had been present. The gall-bladder was distended and there was one stone in the cystic duct, while two were removed from the common duct by the duodenal route. The wound healed, but it reopened upon an attack of pain

followed by jaundice. The biliary fistula which followed was subsequently cured by the removal of another gall-stone from the common duct by choledochotomy. The patient is now well.

CASE 59.—The patient, a woman, aged 38 years, was seen by me at the General Infirmary. There had been colic and jaundice for six months with loss of weight and of strength. Deep jaundice was present. There were gall-stones in the common duct. Duodeno-choledochotomy, performed on Jan. 31st, 1901, resulted in a good recovery and the patient was well some months later.

CASE 60.—The patient was a woman, aged 49 years. She was seen by me at the General Infirmary. For six years colic had persisted with varying jaundice. There were eight large stones and some small ones in the common duct. On March 22nd, 1901, duodeno-choledochotomy was performed, a good recovery ensuing, and the patient was well some months later.

P.S. (March 21st, 1902).—Since handing in my paper to the secretary of the society I have had eight additional cases of choledochotomy, all of which have recovered. It may interest the Fellows of the society to note that the final paragraph of the paper was a forecast; fortunately, the unavoidable postponement of the communication has enabled me to prove that a 5 per cent. mortality was a reasonable estimate, for it will be seen that of the cases—21 in number—operated on since July of last year all have recovered; and that including all my cases of choledochotomy since June, 1900, there has only been a mortality of 5·5 per cent.

Leeds.

ON A CASE OF PNEUMOCOCCIC GASTRITIS AND GENERAL INFECTION,

WITH SOME REMARKS ON THE INFECTION OF MUCOUS MEMBRANES BY DIPLOCOCCUS PNEUMONIÆ.[1]

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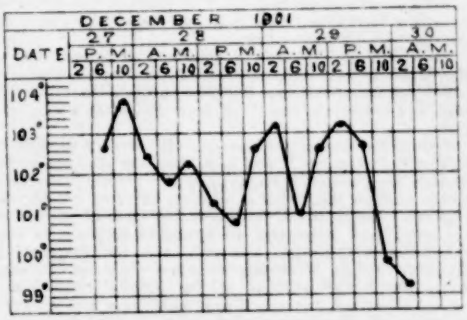
WHEN dealing lately with the pathology of pneumococcic infection as a whole[2] it was not possible for want of time to refer otherwise than briefly to the lesions of mucous membranes which may be caused by diplococcus pneumoniæ. Such lesions have attracted comparatively little attention from pathologists, partly because their importance has been overshadowed to some extent by other more conspicuous results of pneumococcic infection—such as pneumonia, peritonitis, meningitis, and arthritis—and partly because of some technical difficulty in the isolation of this particular organism when it occurs in lesions of mucous surfaces which will frequently be so contaminated with other bacteria that the primary causative agent may be difficult of identification. A considerable number of writers have, however, referred more or less casually to various morbid conditions of mucous membranes, such as laryngitis and enteritis, occurring in fatal cases of pneumonia; and it is probable that pneumococcic lesions of mucous membranes are of much more frequent occurrence than the number of recorded cases in which a satisfactory bacteriological examination has been made would indicate.

The case of acute membranous gastritis due to pneumococcic infection which will be next referred to is of interest as being, so far as I can ascertain, the first case of the sort recorded.

The patient, aged 26 years, was admitted into Dr. W. Pasteur's wards at the Middlesex Hospital under the care of Dr. F. J. Wethered, and I have to thank both these gentlemen for their permission to make use of the clinical notes of the case. The patient was admitted on Dec. 27th and the following history was obtained. A fortnight previously he came under treatment for a "quinsy" and had remained ill ever since. Three days before admission a free attack of epistaxis came on whilst he was blowing his nose and since then there had been an almost continuous oozing of blood from the nostrils. On the day before his admission he had brought up by the mouth a quantity of dark-coloured matter which had a very disagreeable smell. On admission the patient was anæmic to an extreme degree. His lips were swollen and in the skin of the back, around the lips, and on the cheeks there were a number of petechial hæmorrhages. There was coagulated blood in the nostrils, on the lips, and on the gums round the teeth. The breath was very offensive and the tongue was dry and covered by a dark grey fur. The pulse was frequent, small, and soft. On the 28th the oozing of blood from the nostrils continued and no further change of any importance in the symptoms was noted. On the 29th the patient was restless, the respiration-rate was hurried, and the pulse was frequent, very small, and of low tension. The temperature began to fall towards the evening and the patient died early the next morning with signs of urgent dyspnœa. It must be noted that throughout the illness there had been no indications in the way of local pain or vomiting which would have suggested any gastric disturbance.



The examination of the body was made about seven hours after death on a cold day. Rigor mortis was present and the body appeared to be well-nourished generally. The skin had a blanched appearance and there were numerous petechial hæmorrhages scattered over its surface; there were several "mulberry spots" on the chin and on the cheeks. There was a deepish, ragged ulcer in the right tonsil and a large blood-clot occupied the upper part of the pharynx. The œsophagus was of natural appearance. The stomach was of normal size and contained some dark-coloured fluid matter which had an extremely offensive "cheesy" smell. The viscus was lined from end to end with a roughish exudation membrane which towards the cardiac extremity was of an almost black colour and was intimately attached to the underlying mucous membrane, and towards the pylorus was of a greyish colour and less closely attached, so that here it could be peeled off in small flakes from the mucous membrane underneath in which there were numerous petechial hæmorrhages. The rugæ of the stomach were swollen and stood out prominently. The wall of the stomach as a whole was slightly thickened but the increase appeared to be due mainly to the new membranous formation. The exudation membrane terminated abruptly at the cardiac and pyloric openings. The general appearance of the stomach was striking and bore some superficial resemblance to what is seen in a severe case of poisoning by a mineral acid. The serous coat of the stomach was somewhat congested and the peritoneal sac contained a few ounces of slightly turbid fluid. There were small, petechial hæmorrhages on the pulmonary pleuræ, on the epicardium, and on the surface of the liver and kidneys. There was an interstitial hæmorrhage, of an area of about the size of a shilling-piece close to the surface of the right lung and there was a small excess of blood-stained fluid in the pericardial sac. Beyond these lesions nothing of importance was noted at the examination.

Bacteriological examination.—Various culture tubes were inoculated (1) from the spleen juice, (2) from the blood of the femoral vein, (3) from the substance of the exudation membrane on the surface of the stomach, (4) from the juice of the hæmorrhagic area in the right lung, and (5) from the juice of one of the "mulberry spots" on the face. From the blood of the femoral vein, from the mulberry spot, and from the hæmorrhagic area in the lung pure cultures of diplococcus pneumoniæ were obtained. From the tubes inoculated from the exudation membrane from the stomach two species of bacteria were isolated—diplococcus pneumoniæ and a

[1] A paper read at a meeting of the Pathological Society of London on Jan. 21st, 1902.

[2] Foulerton: The Pathology of Pneumococcic Infection, THE LANCET, August 17th, 1901, p. 472.

bacillus which in its cultural characteristics corresponded generally with bacillus mesentericus vulgatus. From the spleen a growth of a bacillus corresponding with the last was obtained and diplococcus pneumoniæ was not isolated from this organ. In sections made through the substance of one of the "mulberry spots" and stained for bacteriological examination no bacteria of any sort could be found. In sections made through the coats of the stomach and the overlying false membrane two kinds of bacteria could be recognised. There were considerable numbers of bacilli which were probably of the same species as that isolated in culture, and also a number of cocci arranged in isolated pairs and in small colonies which stained by Gram's method showed a distinct tendency to diplococcal arrangement, were in many cases surrounded by a distinct capsule, and in all respects corresponded with diplococcus pneumoniæ as it is seen in animal tissues. These bacteria were seen principally in the exudation membrane and in the immediately subjacent necrotic tissue; only a few could be found in the submucous connective tissue and then only just below the muscularis mucosæ.

The strain of diplococcus pneumoniæ isolated was of comparatively low virulence for rabbits; two animals received by intra-peritoneal injection medium doses of a 48 hours' old culture in broth and recovered after a temporary illness.

General histological examination.—In sections through the wall of the stomach it was seen that the changes chiefly affected the glandular structure of the mucous membrane. On the surface there was a fibrinous layer of considerable thickness beneath which the glandular layer of the mucous membrane had undergone an extensive necrosis, in some places down to the muscularis mucosæ, so that frequently no recognisable trace of tubular structure remained. In other places the deeper portions of the glands retained their general structure, but the lining epithelium was cloudy or disorganised. Small masses of altered blood pigment were scattered throughout the mucous membrane and quantities of apparently unaltered red blood cells could be seen lying both within the lumen of the glands and free in the interglandular connective tissue. Below the muscularis mucosæ the submucous connective tissue layer appeared to be but slightly thickened; the spaces of the connective tissue were somewhat enlarged, as if after distension by a serous effusion; and there were largish masses of homogeneous yellowish brown pigment scattered about, especially in the neighbourhood of blood-vessels. The muscular coat showed very little change; here and there were masses of altered blood pigment resembling that seen in the submucous layer. One notable point in the histological examination was the very slight evidence of any inflammatory reaction. In the submucous coat there was no indication at all of such reaction, and in the muscular coat there were only a few collections of leucocytes at wide intervals.

A consideration of the pathology of the case suggests that the primary lesion was perhaps a pneumococcic infection of the right tonsil, though this was not proved. The infection of the stomach then resulted from the swallowing of the parasite, and the general infection followed the invasion of the stomach. The healthy stomach, with its strongly acid secretion, would in all probability be an extremely unfavourable site for the growth of diplococcus pneumoniæ, and it is not unlikely that a certain amount of gastritis resulting from the swallowing of fœtid pus from the ulcer on the tonsil was a necessary preliminary to the pneumococcic invasion of the gastric mucous membrane.

The absence during life of any vomiting is noteworthy, the more especially as there was no indication after death of any distension of the viscus which would have suggested paralysis of the muscular coat.

The pathological changes in the stomach in this case form a strong contrast to those in the case of phlegmonous gastritis due to streptococcic infection described by Dr. W. Cayley[3] in which whilst the surface epithelium and glandular layer of the mucous membrane were hardly at all affected there was great thickening of the submucous connective tissue coat, the result of a purulent infiltration. I have said that I have not been able to find any previous record of a case of this sort, but Dieulafoy in a lecture on *gastrite ulcéreuse pneumococcique*[4] has described a condition which is probably a later stage of a similar lesion. Dieulafoy's case was that of a man, aged 35 years, who was admitted into hospital with a history of pain in the side for seven days past. On admission a diagnosis of pneumonia on the right side was arrived at, but there were also very marked abdominal symptoms in the way of pain, diarrhœa, and vomiting. Two days after admission there was a severe attack of hæmatemesis, followed by the appearance of blood in the stools, and again hæmatemesis; the patient died on the fourth day after admission. At the examination after death evidence of a general pneumococcic infection was found, pneumonia on the right side, pericarditis, and peritonitis; the specific coccus was isolated from all these lesions. On opening the stomach it was seen that the mucous membrane presented a number of small erosions, either round or oval in shape, and with a diameter of from two to three millimetres. The erosions were especially numerous near the pylorus, and as many as 10 or 12 could be counted in a square centimetre of the mucous surface; many of them had a small blood-clot at their base. Dieulafoy describes the lesions in his case as consisting of an erosion of the whole thickness of the glandular layer of the mucous membrane down to the muscularis mucosæ, due to a rapid and localised necrosis of the areas affected. There was little or no inflammatory reaction in the tissues in the neighbourhood of the erosions. In sections a large number of diplococci could be seen both in the interglandular connective tissue and within the capillaries, the distribution of the cocci being general and not limited to the immediate neighbourhood of the erosions.

It is extremely probable, then, that Dieulafoy's case simply represents a later stage of a lesion such as was found in the case which I have described; in the latter case, if the patient had lived long enough for the exudation membrane and the necrosed portions of the mucous membrane to be thrown off it is probable that a condition of ulceration similar to that which Dieulafoy describes, but perhaps on a rather larger scale, would have resulted.

Dieulafoy also refers to another condition of the stomach occurring in the course of a pneumococcic infection. The patient, a man, aged 45 years, was admitted into hospital with signs of pneumonia on the left side; subsequently there were indications of peritonitis and an acute arthritis of the left wrist. At the examination after death the diagnosis of pneumonia was verified; there were three interlobular abscesses in connexion with the left lung, purulent meningitis, peritonitis, suppurative arthritis of the left radio-carpal joint, and vegetations on one of the aortic valves. The presence of diplococcus pneumoniæ was demonstrated in these lesions. On opening the stomach a number of hæmorrhagic patches were seen in the mucous membrane and in the submucous connective tissue. In the mucous membrane these hæmorrhagic patches were situated just below the surface and there was no sign of inflammatory reaction around them. Bacteriological examination of the wall of the stomach gave no results.

This second case referred to by Dieulafoy probably represents a different condition of things to that prevailing in his first case and in my own. In the two latter cases there is the result of a local infection of the mucous membrane from without by swallowing; in the other the change is probably merely one of the general effects of a pneumococcic blood infection in which, whether occurring naturally in man or induced artificially in experimental animals, there are to be found sometimes petechial hæmorrhages into the skin and the mucous and serous membranes.

Apparently closely allied in its pathology to the ulceration of the stomach described by Dieulafoy is the case of ulceration of the colon recorded by Rathery and Chauffard.[5] The patient was a man, aged 51 years, who was admitted into hospital with pneumonia at the right base. After admission there were three attacks of profuse hæmorrhage from the bowel and the patient died on the thirteenth day of his illness. At the examination after death a double pneumonia was found. The mucous membrane of the ascending colon was coated with blood and there were blood-clots in the transverse and descending portions. Scattered over the mucous membrane were punctiform hæmorrhages and at the junction of the transverse and descending portions there were five or six superficial ulcers, each with a diameter of from one to two millimetres. There were similar ulcers at the

[3] A Case of Phlegmonous Gastritis, due to Streptococcic Infection, Transactions of the Pathological Society of London, vol. liii., 1902.

[4] Gastrite Ulcéreuse Pneumococcique, grandes Hématémèses, Clinique Médicale de l'Hôtel Dieu de Paris, iii., p. 219, 1898-1899.

[5] Hémorragie Intestinale mortelle dans un cas de Pneumonie, Bulletin de la Société Médicale des Hôpitaux, 3me série, 1901, p. 978.

lower end of the colon and one in the rectum. These ulcers had resulted from a destruction of the glandular layer of the mucous membrane, the muscularis mucosæ not being affected. Diplococcus pneumoniæ was isolated from the blood and from the pneumonic portions of lung, and in sections through the ulcers in the colon there could be seen diplococci which stained by Gram's method.

With regard to other mucous membranes pneumococcic lesions of practically every such surface have been described and verified bacteriologically.

In addition to causing acute abscess of the tonsil diplococcus pneumoniæ appears to be a fairly frequent cause of acute membranous tonsillitis and pharyngitis. The exact bacteriological identification in these cases is rendered difficult by the fact that the organism is a frequent parasite of the healthy mouth. But the number of cases in which there are the formation of a false membrane and destruction of the superficial layer of the epithelial membrane associated with the presence of the coccus in predominant numbers, and without any of the other bacteria—bacillus diphtheriæ, streptococcus pyogenes, and saccharomyces albicans—which are known to cause similar lesions, leaves little doubt as to the fairly frequent occurrence of an acute membranous pharyngitis due to this cause. Bezançon and Griffon, who have especially studied this class of cases, have tested the serum reaction in 10 cases of acute non-diphtheritic pharyngitis.[6] Employing the method which they have devised for testing the serum reaction in pneumococcic infection, these writers claim to have obtained a positive agglutinative reaction with cultures of diplococcus pneumoniæ in every case.[7]

Amongst the consequences of pneumococcic pharyngitis is perforation of the pillars of the fauces, as in a case recorded by Munro.[8] In this case there was a membranous tonsillitis which spread over the palate from one side to the other, and diplococcus pneumoniæ was present in six out of seven examinations made. During the case some nerve symptoms were observed which were thought to be suggestive of diphtheria, but which were probably an example of the paralysis which has been observed on a few occasions as a sequela of pneumococcic infection.

Another possible result of pneumococcic pharyngeal infection, spreading along the Eustachian tube, is the otitis media which is not infrequently caused by this organism.

I have also examined a single case of laryngitis probably due to this organism and occurring in a man who died with a pneumococcic abscess of the lung. On one of the false vocal cords there was a greyish membrane which was closely adherent to the underlying surface. Diplococcus pneumoniæ was isolated in pure culture from the pulmonary lesion, and diplococci resembling it were seen in smear preparations made from the laryngeal membrane.

In connexion with the eye there is a form of membranous conjunctivitis caused by the coccus, sometimes occurring without any obvious source of auto-infection, sometimes in the course of a pneumonia, and then probably caused by direct conveyance of infection. This membranous pneumococcic conjunctivitis is probably not so common as a more localised suppurative keratitis due to the same cause which has been described by several writers. Uhthoff, for instance, out of 50 cases of suppurative keratitis found diplococcus pneumoniæ in pure culture 24 times and associated with other bacteria seven times.

Diplococcus pneumoniæ does not seem to have been often found by those who have specially studied the bacteriology of the uterus and vagina, whether healthy or diseased. Doyen states that he has identified the coccus in the secretion of the healthy vagina but I cannot find any record of its occurrence in cases of vaginitis. Cohn[9] has recorded a case of pneumococcic endometritis and general infection in a woman, aged 35 years, who was admitted into hospital with metrostaxis coming on three months after a miscarriage. After death there were found suppurative endometritis with retained portions of placenta, ulcerative endocarditis affecting the aortic valves, suppurative meningitis, and two softening infarcts in the spleen. Diplococcus pneumoniæ was present in all the lesions.

With regard to pneumococcic salpingitis there is rather more evidence; Witte identified the coccus in four out of 39 cases examined, Hartman and Morax found it in two out of 33 cases, and other cases have been published.

Infection by the vagina has been thought to explain the sex-incidence of pneumococcic peritonitis; but as a matter of fact the significance of available statistics on this point is not quite clear. It is true that a large majority of the cases recorded in children have happened in girls, but on the other hand the few cases which I have been able to find recorded in adults, and occurring otherwise than as an incident of a general infection, have all been in males.

The last case of pneumococcic infection of the mucous membranes which need be mentioned is the rather remarkable one published by Cary and Lyons[10] of a boy, aged 11 years, who, with an attack of acute lobar pneumonia, developed on all the mucous surfaces of the body open to inspection a pseudo-membranous exudation caused by diplococcus pneumoniæ. The boy's illness began on Jan. 5th with sore-throat and pyrexia. On the 7th there were indications of lobar pneumonia and an abundant white exudation membrane was noticed on the tonsils. This exudation membrane spread to the general cavity of the mouth and to the gums: it could be peeled off in shreds, leaving beneath a raw, granular, bleeding surface. Four days later a fibrinous conjunctivitis with numerous subconjunctival hæmorrhages developed. Two days later again the glans penis—the organ had been circumcised—became covered by a thick, adherent membrane. On the day next following mucus was found in considerable quantities in the stools and a deposit of false membrane formed round the anus. The patient ultimately recovered. Diplococcus pneumoniæ was present in the sputum and was identified in all the various exudation membranes; pure cultures were isolated and tested on rabbits in the usual way.

A consideration of these manifestations of pneumococcic infection in mucous membranes generally shows that here the pathogenic action of the coccus, after allowing for different local conditions, may be much the same as when it causes a lobar pneumonia. There are the same fibrinous exudation and destruction of surface structure and the same tendency to extravasation of blood that are seen when the pulmonary vesicles are attacked.

Sutton.

THE TREATMENT OF GONORRHŒA, WITH SPECIAL REFERENCE TO BLADDER IRRIGATION.[1]

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As the outcome of recent bacteriological investigations I think we shall all be agreed that gonorrhœal urethritis is a localised septic infection, in some cases becoming even general owing to the presence of a micro-organism which goes by the name of "gonococcus" and which was first demonstrated in 1878 and 1879 by Bouchard and Neisser. This organism is kidney-shaped and is met with as a diplococcus invading epithelial and pus cells or lying free in the secretion. Form alone does not distinguish the gonococcus from cocci which are found, according to Lustgarten and others, in the normal urethra, the distinction between them being that whereas they both stain with the aniline dyes the gonococcus does not stain with Gram's solution as does the other. Other micro-organisms are found at times in conjunction with the gonococcus—viz., the bacillus tuberculosis, the staphylococcus, and the streptococcus, the presence of which may account for suppuration in distant parts, as in suppurative gonorrhœal arthritis. In order therefore to cure a gonorrhœa one must direct one's energies to destroying these micro-organisms or to rendering the tissues attacked an unfit habitat for them.

The course run by a gonorrhœa may be divided into four periods: (1) the period of incubation; (2) the acute stage;

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[6] Le Pneumocoque dans les Angines, Presse Médicale, 1900, p. 294.

[7] Etude de la Réaction agglutinante du sérum dans les Infections expérimentales et humaines à pneumocoques, Annales de l'Institut Pasteur, tome xiv., p. 449, 1900.

[8] Membranous Sore Throat and Perforation of the Faucial Pillars resulting from Infection by the Pneumococcus, Glasgow Medical Journal, vol. lvi., p. 274, 1901.

[9] Münchener Medicinische Wochenschrift, 1899, p. 1558.

[10] Pseudo-membranous Inflammation of the Mucous Membranes caused by the Pneumococcus, American Journal of the Medical Sciences, vol. cxxii., p. 298, 1901.

[1] A paper read before the Æsculapian Society on Nov. 22nd, 1901.

(3) the subacute stage; and (4) the chronic stage, known generally as gleet. The treatment for one and all of these stages may be divided into general and local. The following constitutional treatment is of use in the first three stages—viz., rest from all active exercise and sexual excitement; abstinence from alcohol, coffee, spices, and salt food, and possibly from tobacco; the free administration of diluents, a daily saline purge, and a hot sitz bath night and morning if obtainable. Sandalwood oil in doses of from 20 to 30 minims three times a day preferably in the capsule form may be given combined with an alkaline and sedative draught, such as bicarbonate of soda and belladonna or of solution of potash, hyoscyamus, and buchu. Here let me remark that I consider local treatment far more important in the treatment of this, which is, at all events at first, a local disease, than the administration of medicines by the mouth. I am well aware that many cases of urethritis get well without local treatment, but I doubt if a true gonorrhœa does so, excepting after a long and weary course.

Let us now consider the local treatment to be adopted in the first or incubation period—i.e., before suppuration becomes established—which usually lasts about three days, though this stage may be curtailed or considerably lengthened. Should the medical attendant be fortunate enough to see the case within a day or two of contagion and when only a certain degree of heat and irritation are complained of, together with some meatal redness and mucoid discharge, I think he is justified in endeavouring to cut short the attack either by the application of a caustic solution or by the injection of some strong antiseptic, as, for example, a solution of perchloride of mercury (1 in 2000), a 2 per cent. solution of mercurol (a new preparation recently introduced by Messrs. Parke, Davis, and Co. and which is a chemical compound of nucleinic acid with mercury), or a solution of nitrate of silver (five grains to the ounce), to be repeated in weaker strengths if necessary. The patient should be directed to urinate immediately before the injection, a point highly necessary to insist upon at any period of the disease when treatment by injections or irrigations is being carried on. Strong solutions of nitrate of silver—as, for instance, from 10 to 20 grains to the ounce—may be applied to the anterior urethra through a urethroscopic tube by means of a cotton-wool swab. This application, as well as strong injections, may be made painlessly if the urethra is first rendered anæsthetic by the injection of cocaine or eucaine. I am now in the habit of using a 4 per cent. solution of each in combination. These caustic and antiseptic applications may be changed for astringents in two or three days if the irritation is diminishing. General treatment on the lines already given should run concurrently. Another method of much service for the rapid cure of what is evidently a commencing gonorrhœa is urethral irrigation by means of which the canal is flushed out from behind forwards with half a pint of some weak antiseptic wash, such as borax, boric acid, or permanganate of potassium repeated every two or three hours. For this treatment to be properly carried out confinement to bed or room is necessary and irrigation should be continued, though less frequently, through the night. By either of these methods a week or 10 days will probably suffice to put an end to all trouble

For the second or acute stage I think most medical men are still of opinion that treatment should be chiefly general. With a view to render the urine non-irritating large quantities of fluid should be taken such as hot water, milk-and-soda-water, barley-water, and weak tea. One or other of the following mineral waters is usually beneficial—viz., Contrexéville, Wildungen, Vichy, and Kronenquelle. The patient should be encouraged to micturate frequently, even rising at night for the purpose. Where copaiba, cubebs, and santal oil disagree methylene blue, urotropine, or salol may be substituted. Hot sitz baths at this stage are of the greatest comfort. Complications such as retention of urine and chordee may require the attention of the practitioner.

After the lapse of about a fortnight or possibly longer the acute stage will have subsided, as shown by the diminution of scalding and the alteration in the character of the discharge which will have become thinner and more muco-purulent. When all pain on micturition has ceased local treatment may be commenced in the form of injections, retro-jections, and irrigations. In the majority of cases urethral injections as carried out by the well-known small glass syringe will suffice, provided, of course, that the inflammation has not extended beyond its reach—viz., into the membrano-prostatic urethra. When it is limited to the anterior urethra any of the following may be used with advantage: sulphate of zinc (one grain to the ounce), permanganate of zinc (one-eighth of a grain to the ounce), liquid extract of Canadian pine (one drachm to one ounce), nitrate of silver (quarter of a grain to one ounce), and either of the more recent preparations—viz., protargol (1 to 2 per cent.) or mercurol (½ to 2 per cent.). Of these I have recently been trying the latter and, I may say, with marked success. Where the deep urethra is involved, as shown by the "wash-out" test, I know of nothing to equal irrigation of the bladder and urethra as advocated and carried out by Janet and Valentine. By this method, if employed night and morning, the patient is usually well in a fortnight or three weeks, possibly sooner—that is, provided that no complication exists. The apparatus consists of a glass reservoir, holding at least a pint, provided with six feet of rubber tubing, stop-cock, and glass nozzle. The reservoir is hung about five feet above a couch on which the patient lies and it is filled with a hot solution of permanganate of potassium, commencing with a strength of 1 in 6000. The patient having just emptied his bladder, the glass nozzle is loosely inserted into the meatus and the stop-cock is partially turned on, or if a clip is used this is but slightly compressed. In this way the anterior urethra is first thoroughly flushed out. By pressing the nozzle firmly into the urethra and at the same time allowing a fuller current to pass, the fluid after distending the anterior urethra will flow on into the bladder. At first it may be difficult to overcome the resistance of the compressor urethræ muscle, but with patience and a little manœuvring this will be accomplished. When the bladder is full the stream is arrested and the nozzle is removed and the patient assumes the erect posture and expels the fluid by natural efforts, somewhat compressing the distal end of the urethra with his finger and thumb in order to increase the back pressure. Other drugs may in this way be used as, for instance, mercurol or protargol with a strength of 1 in 400 to commence with.

In chronic gonorrhœa or gleet, whether shown by a sealing of the meatus, a slight discharge of muco-pus often only seen on rising from bed, or by shreds in the urine, a thorough examination should be made with the inflating urethroscope as supplied by Schall. Although aerial distension modifies the appearance of the flaccid urethra it certainly facilitates the discovery of lesions such as stricture, inflamed follicles, granular patches, adventitious pouches or pockets, and papillomata, and through its tube one can successfully treat the majority of these. There are those who claim to find it to be equally useful in the deep urethra, but this is not my experience, for the mucous membrane as seen through it in this part of the urethra always appears to me to be swollen and congested owing, no doubt, to the pressure of the tube, and inflation is here impossible. Although it is possible to see the vera montanum it is difficult to tell whether the appearance seen is due to disease or to the method of examination. When a gleet has lasted for six months, especially if there have been previous attacks, the urethra should be examined for stricture, even although the patient assures you that his "stream of urine is as good as ever." For this purpose the exploring bougies of Otis are excellent. Should a stricture be found a urethroscopic examination may be unnecessary and treatment directed to the cure of the stricture should be undertaken forthwith. You will note the word "cure," for contrary to the old dictum, "once a stricture always a stricture," I hold the opinion that many cases permit of a permanent cure if thoroughly and intelligently treated. But I must refrain from all temptation to go into the subject of the treatment of stricture, however alluring, on the present occasion.

Granular patches of congested areas of considerable frequency in long-standing cases are met with chiefly in the bulbous urethra and can be satisfactorily treated by the application of nitrate of silver on a wool swab which may also suffice for the cure of inflamed follicular openings. Warty growths should be curetted and small follicular abscesses, whether of Littré's glands or those of Cowper, may be treated either by electrolytic puncture or intra-urethral incision. These several manipulations when carried on through a tube from five to six inches in length, the lumen of which does not measure more than a No. 10 or No. 12 English catheter, require care, patience, and considerable dexterity.

Just as the acute phase of gonorrhœa is not limited to the penile urethra but may extend backwards, involving in turn the membranous and prostatic urethra, the bladder, even extending up to the kidneys, with fatal results, so a gleet may have its seat in the deep urethra, in the prostatic ducts, and seminal vesicles. For chronic posterior urethritis the following methods suggest themselves—the passage of large-sized steel sounds, possibly coated with some tenacious ointment, electrolysis, Janet's irrigation, instillation of some silver salt, or even the application of lunar caustic itself. Personally I have come to rely entirely upon either irrigation or instillation, or the one supplemented by the other. For chronic prostatitis or vesiculitis where muco-pus is pent up to be discharged at intervals I know of nothing to touch massage carried out by a finger in the rectum. Although somewhat uncomfortable for both patient and surgeon it is wonderful how soon the urine clears up which had previously been loaded with shreds and threads.

Until quite recently long-standing cases of gonorrhœa and gleet were amongst the most difficult a surgeon was called upon to treat, but now owing to the introduction of Janet's irrigation treatment in uncomplicated cases a cure may be confidently expected within a few weeks.

I have abstained from inserting notes of cases illustrating many of the methods of treatment in this communication, also from touching upon the disease as found in the female and upon the many complications in the male, for time will not allow of it. Let me conclude by asking the following questions, to each of which I will append a short answer, rather by way of inviting discussion than with the object of closing it.

1. Is it necessary to distinguish between gonorrhœa and a simple urethritis?—If it is, it necessarily follows that it should be a routine practice to examine microscopically every case of urethral discharge, at all events at its onset. But I very much doubt if one medical man in 50 does this, or if he does, it is not with the object of directing treatment but rather with a view of determining a social or medico-legal question.

2. Are we warranted in trying to abort an attack?—I most certainly think that we are if we see the case before the acute stage and if the patient will consent to lie up for about a week.

3. Is treatment by bladder and urethral irrigation to be recommended in the acute stage?—Janet and Valentine both favour it and Dalton,[2] speaking of the acute stage, says: "Local treatment has always been a much-debated point, many authors advocating waiting for the acute stage to pass off before any local treatment. This waiting certainly allows the gonococci to increase and to invade the tissues more deeply and since irrigation has become an actual treatment it seems more rational to endeavour to arrest the morbid process as soon as possible." Irrigation having been decided upon the earlier it is begun the better. Patients who are seen very early in this disease will pass through it without practically any pain and those who are further advanced and in the stage of profuse discharge, ardor urinæ, &c., will quickly be reduced to a comfortable state. It is not at all unusual for these cases to be completely well in three weeks. Neisser,[3] speaking of the treatment of acute gonorrhœa, says: "Our procedure is as follows: (i) determination of the presence of gonococci, &c.; (ii.) in all cases the immediate commencement of injections." From what I have said it will be gathered that I do not advise injections in the acute stage. I have refrained, as a rule, from all interference with the urethra, believing that any abrasion of the urethral mucous membrane might open the way to a general septic infection. I have also hesitated to use Janet's irrigation in a profuse urethral discharge, such as exists when the disease is at its height, fearing that I might not be able sufficiently to disinfect the urethra to obviate all risk of setting up a gonorrhœal cystitis. I shall be glad to be convinced that I need not be so timorous.

4. My fourth question is: What constitutes a cure?—We must not conclude that a patient is cured when he no longer sees any discharge, not even the morning drop, for shreds may still remain in the urine, the heavier variety of which—viz., those which sink to the bottom of the glass—usually contain gonococci; not so, however, the fine partially transparent filamentous threads which float in the urine. For my part, I look upon a patient as being cured when, a month after all treatment has ceased and he has reverted to his ordinary course of life, no sign of discharge is present, there is no sealing of the meatus, and no débris in the urine.

Harley-street, W.

[2] Edinburgh Medical Journal, July, 1901.
[3] Dermatologisches Centralblatt, vol. i., No. 1.

AN ANALYSIS OF A SERIES OF OPERATIONS FOR THE EXTRACTION OF CATARACT.

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This series of cases—77 in all—embraces a period from January, 1897, to April, 1901. The cases are consecutive and all lenses removed by me during the period are included. Any case was submitted to operation in which there was a reasonable prospect of improving the vision. One patient was a European, three patients (embracing four eyes) were well-to-do natives, and the rest were pauper natives. The cases are grouped together in the first place because they include all the extractions of the lens performed by me in the interval between the two periods in which I have acted as superintendent of the Government Ophthalmic Hospital, Madras, and, secondly, because a careful study of the series has led me for the present to abandon the simple operation in favour of the combined method. The latter reason supplies my apology for intruding such a small series on public notice.

The operation adopted consisted in, first, preliminary capsule-rupture with Bowman's needle; secondly, a sclero-corneal incision, varying in size from nearly a half to a quarter of the circumference, according to the size of the nucleus to be dealt with; thirdly, expression of the lens, and the clearing of the chamber with a curette and cotton-wool sponges mounted on little sticks; and fourthly, the application of an antiseptic dressing. Iridectomy was not performed as a routine measure. All instruments were boiled and a general antiseptic regimen was adopted.

The total number of eyes operated on in the series was 77; of these, 39 were right eyes and 38 were left eyes. The total number of patients represented was 53; of these 25 were men and 28 were women. Of the 53, 40 were caste Hindus, 4 were Mahomedans, 8 were Hindus without caste, including native Christians, and 1 was a European. Their ages were as follows: 1 was 29 years of age, 7 were between 30 and 40 years, 18 between 41 and 50 years, 15 between 51 and 60 years, 7 between 61 and 70 years, 4 between 71 and 80 years, and 1 was 90 years of age.

Of the 77 cataracts extracted 18 were Morgagnian, 38 were cortico-nuclear, and 21 were nuclear. The large relative preponderance of Morgagnian cataracts is due to the fact that the first 39 operations of the series were done in an up-country station, in which no cataract-extractions had been performed for many years; many of the cataracts were therefore hypermature; out of these 39 no less than 13 were Morgagnian—i.e., 33·3 per cent.

Complications Present before Operation.

Catarrhal ophthalmia.—This complication, which occurred in 12 cases, was always dealt with before operation and led to no serious consequences in any case.

Granular ophthalmia with slight pannus.—This condition occurred twice in the same patient. In spite of long-continued treatment beforehand there was considerable ciliary trouble in both eyes after operation.

A corneal nebula was present in one case.

Pterygium.—There was pterygium in six cases. Transplantation was only performed once, the growth being avoided by making an oblique section in the other cases.

Immaturity of cataract.—Five cases presented this condition.

Tension + 1.—This was noted in one case. A free prolapse of the iris occurred during the after-treatment. After iridectomy the case progressed evenly and had four-metre[1] vision.

[1] Four-, five-, six-, &c., metre vision implies the ability to count miniature bull's-eyes correctly at these distances. A vision of M.B.E. (miniature bull's-eyes) at six metres is equivalent to $\frac{6}{6}$ vision by types.

Chamber very shallow.—In two cases this was observed. The iris was scraped during section by a knife. Both patients did well and had good vision.

Complete posterior synechia.—There was complete posterior synechia in one case. Delivery was effected by the vectis after free iridectomy. There were free hæmorrhage from the iris and a slight escape of vitreous. Vision was raised from a mere perception of light and darkness to the ability to detect hand-movements at a distance of three metres.

Dislocation of the lens into the hyaloid.—This occurred in two cases. In both the lenses had been couched by Mahomedan operators. In one the dislocation was of some months' standing and a Morgagnian nucleus was removed by the vectis, the capsule being dragged out by forceps. There was a slight escape of vitreous and the case did well, four-metre vision being secured. The second case had been couched the day before my operation. There were marked ciliary congestion, intense pain, and tension was + 2. Under chloroform a Morgagnian nucleus was delivered by the vectis, with very slight escape of vitreous. Some ciliary congestion continued. Recovery with six-metre vision followed.

Great age of the patient.—One case was complicated by the advanced age (90 years) of the patient. Her skin hung in satiny folds and she looked more like a monkey than a woman, but she made an excellent recovery. The night after her operation she got out of bed and stole a necklace belonging to another patient. She counted miniature bull's eyes at four metres and could have done better but would not continue the test.

A COMPARISON OF THE SIMPLE AND COMBINED (I.E., WITH IRIDECTOMY) OPERATIONS.

Of the 77 extractions, 52 were conducted by the simple method, 24 by the combined method, and one had undergone preliminary iridectomy four years before.

Of the 52 simple cases a threatened prolapse was successfully treated by the use of eserine in 1 case, or 1.92 per cent.; a slight prolapse not demanding iridectomy occurred in 3 cases, or 5.76 per cent.; a prolapse of the iris demanding excision by the severity of the symptoms excited occurred in 7 cases, or 13.46 per cent.; and the eye made an uninterrupted recovery in 41, or 78.84 per cent. of the cases.

The average vision was as follows: (1) in the simple cases in which no prolapse occurred it was M.B.E. at 5·02 metres (N.B. This calculation excludes two eyes of one case in which there was cupping of the disc before operation, it also excludes six cases in which the vision was good but not tested, and it includes one case in which eserine reduced a threatening prolapse); (2) in the simple cases in which a prolapse was excised as soon as it was recognised it was M.B.E. at 5·20 metres; (3) in the simple cases in which iridectomy was not performed, though a prolapse had occurred, it was M.B.E. at 2·5 metres; and (4) in the combined cases in which iridectomy was performed at the time of operation it was 4·94 metres (N.B. This calculation excludes four cases with good vision which escaped testing; it also excludes two cases of escape of the vitreous, one injury inflicted during convalescence, one case of old fundus change, and one of complete posterior synechia). If the last two cases alone are excluded the average vision in this group falls to 4·31 metres.

In considering the above statistics, it is to be remembered that the group of simple cases in which operation for prolapse was performed was a comparatively small one and by good fortune no accident occurred in any of the late iridectomies. An experience of 1100 cataract operations already published in the *Indian Medical Gazette* of 1897 convinces me that it would be very unsafe to presume on these figures. I regard prolapse demanding late iridectomy as the gravest complication that can arise in the after-treatment of a cataract case, suppuration being, of course, excepted. The high ratio of visual result here shown may, however, be safely regarded as an indication that the performance of an iridectomy does not materially lower visual acuity in eyes submitted to cataract extraction.

The lower visual results in the cases of combined extraction—i.e., in those in which iridectomy was done at the original operation—are easily explained when we remember that in this series an iridectomy was in a good many cases made at the time of operation because the case was complicated. The simple cases thus represent a more favourable class than do the others.

In order to establish a comparison between the two classes, a number of patients were selected in whom the vision was apparently the same in both eyes before operation and who had double cataract. The results of this series of experiments are as follows:—

Number of case.	Kind of operation.	Side.	V = M.B.E. at—
1	Simple.	Right.	6 metres.
	Combined.	Left.	6 ,,
2	Simple.	,,	5·5 ,,
	Combined.	Right.	6 ,,
3	Simple.	,,	4 metres (on the twenty-sixth day).
	Combined.	Left.	3 metres (on the nineteenth day.)*
4	Simple.	,,	6 metres.
	Combined.	Right.	6 ,,*
5	Simple.	,,	3 ,,
	Combined.	Left.	4·5 ,,
6	Simple.	,,	6 ,,
	Combined.	Right.	6 ,,
7	Simple.	,,	6 ,,
	Combined.†	Left.	1·5 ,,
8	Simple.	Right.	2 ,,
	Combined.‡	Left.	3 ,,

* The delay of one week in testing the right eye accounts for the difference fully.

† The left eye was injured by a bedpost on the twenty-first day; severe hæmorrhage followed and a good deal of ciliary irritation was excited.

‡ There was a slight escape of vitreous from the right eye during the operation.

While freely admitting that the test applied was inferio in delicacy to that which would have been used in dealing with the more intelligent and appreciative European and that this detracts somewhat from the value of the results, nevertheless the facts are sufficiently consistent and have been sufficiently accurately obtained to warrant the deduction that in these cases the simple operation gave no better results than did the combined operation. I have been led to the same conclusion by the consideration of other series of operations which I have had the opportunity of performing.

In favour of the simple operation it is usually advanced (1) that it gives better visual results than does the combined operation; (2) that it provides a more active pupil than does the combined operation; (3) that the dazzling caused by the presence of the coloboma is avoided; and (4) that there is less mutilation of the eye. With the first contention I cannot agree; as to the second, I find that the pupil in a well-performed case of the combined operation is very active and I doubt if there is anything in favour of this proposition; as to the third, the upper lid covers the coloboma and the patients do not seem to be aware of its presence; and as to the fourth, it appears to me to appeal to a sentiment which is not founded on sound surgical principles. I believe, in common with many other surgeons, that the after-course of the combined operation cases is more even and uneventful than is that of the simple operation.

Against the simple operation there is always the grave danger of prolapse of the iris. Even Knapp admits to the occurrence of prolapse in 7·6 per cent. of his latest cases; most operators admit more, and I believe that the 14 per cent. met with by me in this series is not excessive. It may be argued that the cases now under review furnish no argument against the simple operation, since the standard of vision in those in which a prolapse was excised is so high. A wider experience than this series affords has convinced me that the danger of losing eyes after prolapse is a very real one, and the anxiety for the three or four days after operation is too dear a price to pay, except for solid advantages which I fail to see that the simple operation can afford. I take the liberty to quote an extract from a paper on Cataract which I wrote and which was published in the *Indian Medical Gazette* in 1897.

On reviewing the statistics of 1068 consecutive cases of cataract-extraction performed by the writer in hospital practice, this statement is strongly illustrated. In 409 cases an iridectomy was performed at the time and the records show that 7·5 per cent. of these cases failed. In 659 cases the simple operation was performed and 8·5 per cent failed. If, however, we separate those cases of simple extraction in which a prolapse of the iris complicated the subsequent course of treatment

from the cases not so complicated, the former show 20·3 per cent. of failure, while the latter show only 6 per cent. It is therefore obvious that in the series under review the less favourable aspect of the cases of simple extraction is due to the frequency of occurrence of this dangerous complication.

Working now with increased experience and improved methods I think that I could greatly better these results, but even so my appreciation of the danger does not lessen. The operation may be done most skilfully, the iris may be left well reposed in its natural position, the incision may have been the limited one required for the removal of a small Morgagnian nucleus and may lie exactly in the sclero-corneal margin or even in front of it, and yet the sudden bursting of the section and the escape of a rush of fluid which has been dammed up behind the iris may carry the upper portion of that membrane into the wound and lead to the serious train of symptoms which warn us that prolapse is present. Neither eserine nor atropine avails to prevent the accident. Iridectomy must now frequently be performed under very disadvantageous circumstances; if an anæsthetic is given the eyeball rotates upwards and the effort to pull it down by means of the forceps threatens the integrity of the hyaloid membrane and with it the safety of the eye; again, if we rely on cocaine alone the strangled iris is so hyperæsthetic that the patient finds it hard to keep quiet and his sudden spasmodic movements make the operation one of the gravest anxiety.

Of the 24 cases operated on by the combined method iridectomy was performed nine times in order to deliver a lens which would not present otherwise; twice in order to facilitate the clearing the chamber of cortex; once on account of total posterior synechia; five times involuntarily by the knife in section; and seven times for miscellaneous reasons. In cases of double cataract in which the first eye was operated on by the combined method whether accidentally or on purpose the second was when possible reserved for a simple operation for purposes of comparison.

COMPLICATIONS DURING EXTRACTION.

In addition to the complications already mentioned above the following were met with during extraction:

The patient so troublesome that chloroform was given.—This was the case three times. I should now inject morphia hypodermically instead of giving chloroform. It has an excellent effect in quieting the patient and at the same time does not deprive us of his help in turning the eye downwards.

Free hæmorrhage from the cut iris.—This occurred twice. It did not affect the prognosis in either case.

The capsule removed by forceps.—This had to be carried out in two cases.

Escape of vitreous.—This took place 11 times. The escape was slight in five cases (vision respectively = M.B.E. at 6, 1·5, 6, and 2·5 metres, and hand-movements at 3 metres); moderate in one case (vision was good but untested, as patient absconded); and extensive in two cases (vision = counting fingers at 1 metre and at 6 metres respectively).

The nucleus very small.—This was the condition twice in the same case. The patient was a *guru*[2] of great sanctity and had been blind for 17 years. Tension in both eyes was above normal, though not markedly so. He was led in by two of his friends. On needling the first cataract there was a free escape of milky fluid but no nucleus could be found; at first it was feared that it had sunk back into the vitreous, but this was not the case and so on needling the second cataract the nucleus was most carefully looked for; after the section the escaping fluid was found to contain a tiny nucleus of the size of a small cocaine lamella (such as one uses for eye medication). The patient was able after operation to count fingers at six metres with both eyes and to find his way about alone with ease; he had cupping of both discs. The effect in the district was to bring in a number of cases as this man's reputation was widespread.

COMPLICATIONS DURING THE AFTER-TREATMENT.

Hæmorrhage into the anterior chamber.—This occurred in four cases. In one case it was due to a fit of coughing on the fifth day; in two cases it was due to injury by striking the eye against furniture on the fifth and twenty-first days respectively; and in one case it was brought about probably by rubbing the eye on the fifth day. Vision was good in all eventually (M.B.E. at 6 metres in three cases and at 1·5 metres in one case).

Section burst by rubbing.—In four cases this happened—in one case on the third day, in one on the seventh day, and in two on the tenth day. In the last two cases the rupture of the section was attended by severe pain and obstinate vomiting. All four patients obtained good vision (M.B.E. at 6, 3, 3, and 4·5 metres respectively).

Section leaking.—This was present in seven cases—till the fourth day in two cases, and till the fifth, sixth, seventh, and eighth days in the others. Of these patients three were between 50 and 60 years of age, one was 65 years of age, and three were over the age of 70 years. The vision was good in all (M.B.E. respectively at 1·5, 2, 3·5, 4, 5, and 6 metres; good but untested in one case).

Keratitis and ulceration of the cornea.—These complicating conditions were present in four cases. In three cases the keratitis was of the striped variety and it cleared up leaving good vision (M.B.E. at 4 metres in one case and at 6 metres in two cases); one patient was a *ganga*-smoker and he and one other of the patients repeatedly took off their bandages. In the fourth case too much cocaine was used and ulceration followed; this was aggravated by the patient leaving hospital surreptitiously for four days. He eventually recovered vision (M.B.E. at 1 metre).

Cyclitis (subacute).—This occurred in three cases. In one case total synechia had existed and the lens was removed by the vectis. In the two eyes of one patient there had been precedent granular ophthalmia and pannus. One patient got good vision while the other two patients derived indifferent vision (hand movements at 3 metres, M.B.E. at 6 metres and fingers at 6 metres respectively.)

Secondary cataract.—There was secondary cataract in three cases. The cataracts were needled on the twentieth, twenty-third, and twenty-seventh days respectively (vision at 3·5, 6, and 5 metres respectively).

Prolapse of the iris.—This condition has already been dealt with.

The vision of the patients was tested after operation by ascertaining at what distance they could count miniature bull's-eyes. These consist of black dots on a white ground, which are shown to the subject through an aperture in a piece of cardboard. The examiner can thus show as many or as few as he wishes. I find by experiment that the dots can be counted by a normal eye at 10 metres. Recruits for the native army are required to count correctly these bull's-eyes at six metres. Patients were tested up to six metres and not beyond. The test is that in use in the Madras Eye Hospital. It is a convenient one when dealing with patients whose intelligence and education are both of a very low order. Several patients absconded rather than submit to being tested; several left without warning as soon as they found that they were in possession of good sight. The native women especially object to wearing glasses and one often hears them saying: "What do I want with glasses? The other women will laugh at me; I can see quite well enough." Some were tested for near vision but the number of cases so tested is, unfortunately, too small to be worth recording. The symbols M.B.E. with the distances in metres in this paper mean that the patients could count miniature bull's-eyes at the distance in metres signified by the number affixed.

An effort was made to keep the patients as long under treatment and observation as possible, and with this end in view the date of supply of glasses was delayed till the patients would stop no longer. The improvement in vision from week to week was very marked in many cases. The following table shows the time during which the cases were under observation before final testing:—

One week	1 case.
From two to four weeks	23 cases.
,, one to two months	39 ,,
Over two months	7 ,,
Time not recorded	7 ,,
Total	77 cases.

The following is an analysis of the visual results obtained[3]:—

Counted miniature bull's-eyes at from 1 to 1·5 metres	4 cases.
,, ,, at from 2 to 2·5 ,,	4 ,,
,, ,, at from 3 to 3·5 ,,	6 ,,
,, ,, at from 4 to 4·5 ,,	7 ,,
,, ,, at from 5 to 5·5 ,,	6 ,,
,, ,, at from 6 metres and above	34 ,,
Vision good but untested	10 ,,
Counted fingers at 6 metres	3 ,,
,, 2 metres	1 case.
Could distinguish hand-movements at 3 metres	1 ,,
No improvement after operation	1 ,,
Total	77 cases.

[2] Guru = a holy man.

[3] A vision of M.B.E. at one metre may be counted as one-tenth normal vision.

The 61 cases with vision of M.B.E. at from one metre to six metres may be unhesitatingly classed as successes, as before operation 58 of these patients were quite unable to count fingers in any light, and were only able to recognise the movements of a hand in front of the eye, as "a shadow moving"; the three others counted fingers respectively at three inches (final vision M.B.E. at five metres), at three feet (final vision M.B.E. at six metres), and at three feet (final vision M.B.E. at six metres, and $\frac{6}{12}$ths by types in a European).

Of the 10 patients with good vision but untested by the bull's-eyes, all could readily count fingers without a glass and all the cases were undoubted successes. These patients absconded because they were satisfied with the result and did not want to be kept further under observation. Six of them were a month or less under treatment; the rest were treated for longer periods. Two of them counted fingers at one foot before operation; the remaining eight patients were only able to distinguish the shadow of the hand moving in front of the eye.

To the remaining six cases the following remarks apply. 1. Two eyes in one patient were raised from faint perception of light to ability to count fingers at six metres. There were very opaque Morgagnian cataracts, with a history of 17 years' blindness and cupping of both discs. The double result was probably the most brilliant of the whole series and, as has been said already, it created a sensation in the district, on account of the patient's reputation as a "holy man." 2. One eye counted fingers at six metres—a poor result, after a free escape of vitreous; the patient's vision before operation was confined to the perception of hand-movements before the eye. 3. One eye counted fingers at two metres—a poor result, due to an escape of vitreous resulting from too small a section. 4. One eye could detect hand-movements at a distance of three metres—a satisfactory if poor result when it is considered that there was a complete posterior synechia to be dealt with. The lens was wrenched out by means of a vectis, and the patient was more than satisfied, as before operation he could only with difficulty distinguish light from darkness. 5. One eye remained in *statu quo ante* after an apparently successful operation and an even recovery. Fundus changes were present.

The results therefore stand thus:—

	Cases.	Percentages.	
Successful as proved by test dots...	61	79·22	
Successful as shown by ability to count fingers easily with naked eye	10	12·98	94·80
Successful (remarkably so, when the circumstances of the case are taken into account—*vide* 1 above)	2	2·59	
Very poor results...	3	3·89	5·19
Failure	1	1·29	
Totals	77	99·99	

PROPOSED SMALL-POX HOSPITALS FOR WORCESTERSHIRE.—Following on its report the committee appointed by the Worcester County Council to inquire into the necessity for establishing isolation small-pox hospitals has issued schemes for the various districts. For Evesham Borough District and the rural districts of Evesham, Pershore, and Tewkesbury it recommends the erection of a hospital for 12 beds at an estimated cost of £1100. Malvern Urban District, Wortley Rural District (south of Teme), and Upton-on-Severn Rural District will have a similar hospital provided. A hospital for 12 beds, costing £1100, will be erected for the rural districts of Wortley (north of Teme), Rock, and Tenbury. In connexion with the King's Norton and Northfield Urban Districts and Yardley Rural District it is recommended that a hospital with 20 beds should be built, and for the urban districts of Lye and Wollescote, Oldbury, and Stourbridge, and Halesowen Rural District a hospital for 16 beds, costing £1150. If the whole of the hospitals are provided out of one county fund a rate of $1\frac{1}{16}d.$ will be required. The question as to what shall be done is to come up for decision at the next meeting of the county council

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF ENTERECTOMY FOR STRANGULATED FEMORAL HERNIA.

BY J. R. RONALD MCCRINDLE, M.B., C.M. GLASG.

THE patient was a married woman, aged 41 years, and was admitted into the North Riding Infirmary, Middlesbrough, on Jan. 7th, 1902, at 3.30 P.M., suffering from a strangulated femoral hernia on the right side. She stated that the hernia had "been down" for seven years except for eight months during pregnancy three years ago. She was said to have vomited continuously since noon on the day previous to admission. After preparation of the patient I proceeded to operate about 5 P.M. with the assistance of Dr. J. Donaldson, the senior house surgeon. The swelling was of about the size of a cricket ball and was tense. On cutting down and opening the sac a quantity of dark-coloured fluid escaped and the bowel was seen to be gangrenous. The constriction was very tight, but after having nicked it I was enabled to pull down sufficient bowel to perform enterectomy which I decided to do, as there was practically no distension above the constricture and the patient was in fair condition. Five inches of bowel were excised. No omentum was present. I made the anastomosis by means of a Murphy's button ($1\frac{1}{4}$ths of an inch). The cut edges of the mesentery were overstitched and the puckered portion buttressed on either side of the line of junction of the bowel in order to protect the weak portion at the reflection of the mesentery. The opening into the peritoneal cavity was enlarged sufficiently to permit the passage of the bowel containing the button. After separation and ligature of the sac the whole wound was closed by means of successive layers of buried catgut sutures and the edges of the skin were brought together with silkworm gut. The time from commencement of the anæsthesia to completion of the operation was 35 minutes.

The woman was somewhat collapsed on return to the ward, so 10 minims of liquor strychninæ were administered hypodermically and a stimulating enema was given. She had a fairly comfortable night and slept about five hours.

On the following day a simple enema was given with good result. Her temperature was 100° F. She was allowed small quantities of plasmon with a teaspoonful of meat juice by the mouth every two hours and a meat suppository every six hours. The wound was dressed and the stitches were removed on the eighth day. The button was passed on the sixteenth day, after which the patient's diet was made more liberal and was gradually increased to the ordinary amount. Her bowels acted daily. She was kept in bed for six weeks and was discharged on Feb. 28th cured.

Middlesbrough.

POST-VACCINAL LICHEN URTICATUS.

BY R. W. MARSDEN, M.D. VICT., M.R.C.P. LOND., &C.,
LATE MEDICAL SUPERINTENDENT, MONSALL FEVER HOSPITAL, &C.

THE following case is particularly interesting at the present time in view of the fact that the medical attendant could not free his mind from the suspicion of small-pox, and it is, I think, further worthy of note since I can find no recorded case agreeing in every particular.

The patient was an adult female who had been successfully vaccinated a month previously. At the time of my visit there were two dry and almost completely healed vaccinal ulcers on the right upper arm and the patient informed me that an inflammatory œdema had been present, extending beyond the middle of the forearm. Previously to the occurrence of the rash there had been no symptoms suggestive of the invasion of an acute disease nor had there been any glandular infiltration or septic absorption or administration of drugs likely to give rise to it. The first indication of

change consisted of a feeling of irritation at the site of the recent vaccination. This persisted for a couple of days and then the appearance of the rash was noticed on the hands and arms. I saw the patient 24 hours after the rash made its appearance and found its distribution as follows: the hands and fingers, both palmar and dorsal surfaces, the front and back of the forearms, and to a much less extent the upper arms. On the lower limbs the plantar and dorsal surfaces of the feet were affected and the adjoining portions of the legs, whilst the rash was present, though less profuse, on the thighs. In addition there were an isolated collection of papules over the lower part of the sternum and a few papules along the border of each pinna. In general the rash may be described as of a papulo-urticarial character, the papular appearance being most marked on the backs of the hands and fingers, a feature which had undoubtedly occasioned the suspicion of small-pox. An examination of these parts alone was, in fact, very suggestive of this disease. There were, however, no rash on the face, no accompanying pyrexia, and, as I have said, no history of recent acute illness. The papules, which were also present on the feet, were bright red in colour, about one or two lines in diameter, circular, and faded on pressure; they were softer than those met with in variola and exhibited a tendency to run together in patches. On the palms and palmar aspect of the fingers they formed bright red, discrete, tender macules, not raised but still round, and especially in the former situation were as much as from two to three lines in diameter. On the arms and legs the spots were soft, flat-topped, in general rather of an urticarial character, varying in size from one to three lines and everywhere accompanied by itching. Many spots had a narrow inflammatory areola but the surrounding redness and œdema were best marked on the pinnæ. In the centre of a few there was a minute scab and on the surface of some others an appearance as though vesiculation was beginning, but both of these manifestations I attributed to the scratching, squeezing, or rubbing to which the patient resorted on account of the irritation. The further course of the eruption was absolutely unlike that of variola as there was no steady progress to vesiculation and pustulation—on the contrary, the spots tended to coalesce over considerable areas, forming a uniform erythema, and then faded.

The interest in the case lies not only in the fact that it was mistaken for small-pox but further in the late appearance of the eruption after vaccination. In this instance a full month elapsed, though, according to Dr. T. D. Acland in Clifford Allbutt's "System of Medicine," post-vaccinal eruptions make their "first appearance between the ninth and fifteenth days," being "always contemporaneous with vaccination."

Manchester.

A CASE OF NUTMEG POISONING.

By ROBERT A. PITTER, L.S.A.

QUITE recently I was called during the night to see a young woman who was stated to be "in a fit." I found her in a collapsed condition, muttering unintelligibly; her extremities were clammy, her pulse was hardly perceptible, and her pupils were somewhat dilated and reacted feebly to light. The symptoms were suggestive of alcoholic poisoning but her breath smelt unmistakeably of nutmeg and I then elicited that she had taken a whole nutmeg, grated, in a wineglassful of gin an hour or so previously. On asking her friends why she had done this I was told that "she was so afraid of having another child." It appeared that the catamenia had been delayed two weeks and, dreading pregnancy, she had taken the advice of some female friend with the result above mentioned. I afterwards made some inquiries and learned that there is a prevailing impression among the domestic servant class that nutmeg is an emmenagogue, although such a large dose is perhaps unusual. Her general condition improving I contrived to empty her stomach of its contents. She remained in muttering delirium throughout the night and slept heavily nearly all the next day, when she awoke apparently recovered. The catamenia followed, accompanied by much pain.

I should be grateful to any reader of THE LANCET for information as to other cases in which toxic effects have been produced by this spice.

Tottenham.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

ST. GEORGE'S HOSPITAL.

TWO CASES OF INTESTINAL OBSTRUCTION.

(Under the care of Mr. G. R. TURNER.)

THE former of the following two cases is a very striking instance of the benefit resulting from laparotomy in tuberculous peritonitis and it is especially valuable as it demonstrates clearly the rapid removal of tubercles deposited in the peritoneum. It is very rarely, indeed, that an opportunity is afforded of seeing the peritoneum soon after a laparotomy for tuberculous peritonitis. Although no satisfactory explanation has been given of the way in which this treatment acts, yet there can be no doubt about the satisfactory character of the results. F. Treves estimated[1] the mortality directly due to the operation as only 2·5 per cent.; the percentage of permanent recoveries is difficult to state with any exactness but Hartmann and Aldibert[2] claimed that 46 cases recovered out of 48. Those cases are the most satisfactory in which no other organs are affected with tubercle. The incident in this case of the retention of a Murphy's button is one by no means rare; it is especially frequently met with when a portion of the bowel has been short-circuited. It is very rare for the button to do any harm when thus retained and in most cases it passes ultimately spontaneously. The second case raises the question as to the desirability of colectomy in intestinal obstruction produced by a new growth. Each case must be decided on its merits. If the general condition of the patient will permit it a primary resection of the affected portion of bowel with anastomosis of the healthy intestine is certainly best, for the risk of a second operation is avoided; but if the patient is much collapsed it is better to do a colostomy and to postpone to a subsequent occasion the resection of the bowel.

CASE 1. *Intestinal obstruction due to tuberculous peritonitis; anastomosis of the ileum with the transverse colon; recovery, with disappearance of all tubercle within 45 days of operation.*—A girl, aged 11 years, was admitted into St. George's Hospital on May 14th, 1901, with the following history. Five days previously she had been attacked with sudden abdominal pain, frequent vomiting, and the passage of blood-stained motions. The child had been in bad health for several months. She was a thin, dark little girl of the fine tuberculous type and was flushed and looked very ill. Her tongue was covered with a brown fur; the pulse was 142 and weak and the temperature was 98° F. The abdomen was moderately distended and moved well on respiration. Nothing could be felt per rectum which contained some slimy mucus. In the right iliac fossa a mass of about the size of an orange could be distinctly felt. It was dull on percussion and tender. When she was placed under an anæsthetic some enlarged glands could be distinctly felt in this situation.

The abdomen was opened in the middle line. A quantity of enlarged tuberculous glands were found scattered throughout the mesentery and the peritoneum generally was studded with miliary tubercle. The lower ileum was enormously distended, injected, and vascular, whilst the ascending colon was collapsed and empty. In the right iliac fossa, in addition to some enlarged tuberculous glands, there was a large mass of matted intestine which included the cæcum and appendix, looking like a very firm intussusception with complete obstruction. As it seemed impossible to reduce this and as in the child's precarious condition it was very inadvisable to attempt removal of this mass of matted intestine it was decided to anastomose the ileum some inches away from the obstruction with the transverse colon by

[1] THE LANCET, Oct. 26th, 1895, p. 1030.
[2] Annales de Gynécologie et d'Obstétrique, June, 1892.

means of a Murphy's button. This was accordingly done and the union of the two portions of bowel was strengthened by a few Lembert stitches. A Keith's drainage-tube was inserted at the lower end of the wound. The latter was kept in for four days after the operation and gave vent to some sanious discharge only. The child did well after the operation and on the 18th she passed flatus by the rectum. On the 20th a quantity of pus, the source of which was not apparent, passed from the lower end of the wound. There was practically no rise of temperature or fever. The bowels were opened after an enema on the 21st, a week after the operation. The stitches were removed on the 31st. The child by this time had a daily action of the bowels and appeared to be quite well. The Murphy's button, however, had not been passed. On June 25th examination by means of the x rays showed this to be in the right iliac fossa, as if it had fallen back into the ascending colon, and at a consultation on the 26th a second laparotomy was advised, the button to be dealt with according to circumstances. On the 28th (45 days after the first operation) the abdomen was opened in the right semilunar line. There was absolutely no trace of tubercle about the peritoneum; the miliary nodules and the enlarged mesenteric glands seen at the former operation had both absolutely disappeared. The intestines were perfectly healthy in every respect but were firmly adherent in the right iliac fossa. The Murphy's button could be felt deeply placed in this situation and surrounded by adherent intestines. It was therefore resolved to leave it.

The child made an uninterrupted recovery from the operation and was sent in July to the convalescent hospital at Wimbledon. She was under observation there until September and has recently been seen. She seems perfectly well in every respect and suffers no inconvenience of any kind from the Murphy's button.

CASE 2. *Intestinal obstruction caused by malignant disease of the colon; colectomy; recovery.*—A woman, aged 59 years, was admitted into St. George's Hospital on May 13th, 1901. She had been losing flesh for the last four months and had had dyspepsia and constipation. On the 9th vomiting started and had continued until the morning of admission. There were much abdominal pain, referred chiefly to the umbilicus, and swelling. The last natural action of the bowels occurred on the 8th. An enema was administered on the 12th with small result and again on the 13th with no result. The patient's condition on admission was as follows. She was a grey-haired woman with sallow complexion and was obviously wasted; the skin was inelastic and wrinkled. The central part of the abdomen was distended and resonant and active peristalsis of the intestines was seen. There was no rigidity. No tumour could be felt. There was good abdominal movement on respiration. The rectum was capacious and empty; no tumour or stricture was to be felt. Her pulse was 120, the respirations were 28, and the temperature was 97·8° F. Dr. F. G. Penrose saw the case and agreed in advising operation.

Mr. Turner opened the abdomen below the umbilicus in the middle line. The cæcum was enormously distended, the appendix was normal, and the sigmoid flexure was collapsed but otherwise normal. The abdominal incision was now extended upwards to allow of examination of the parts above the umbilicus. The splenic flexure of the colon was then found to be the seat of a tight annular malignant stricture involving about one and a half inches of the bowel. No secondary growths were to be seen. The growth was resected with about one inch of healthy bowel on each side and the ends were sutured, Allingham's bone bobbin being used. A few Lembert stitches were also inserted. Some strips of gauze and a glass drainage-tube were passed down to the seat of resection and a tube was inserted to drain the pelvis. On the 14th the patient was much better. No pain or vomiting was present. There was much serous discharge from the wound. On the 12th she was doing well; all plugging was removed. On the 20th the drainage-tube was removed. A good motion was passed by the bowel. On the 23rd there was some distinct fæcal discharge from the wound (? due to some slight sloughing at the seat of suture). On the 30th she was doing well. There was a slight discharge, no longer feculent, from the wound. The bowels were acting normally and good motions were passed. The patient was being fed on solid substantial food.

Remarks by Mr. TURNER.—The chief interest of Case 1 consists not so much in the intestinal obstruction with the concomitant pseudo-intussusception due to the tuberculous peritonitis as in the rapid disappearance of the tuberculous condition. Enlarged mesenteric glands numbering at least 20 or 30 and multitudes of miliary tubercles had entirely disappeared when the second laparotomy was performed 45 days after the first operation. That such disappearance follows operation is well known, but this case shows how quick that disappearance may be and how soon a diseased intestine and mesentery may recover from tuberculous invasion. Any attempt at dealing with the matted ileum and cæcum with a view to their disentanglement or resection in the child's very grave condition would most undoubtedly, in my opinion, have proved quickly fatal. To use Murphy's button seemed to be the quickest and the safest course to pursue, and although the button has not even yet come away its presence gives rise to absolutely no symptoms. It should have been mentioned that at the first operation a minute perforation was seen in the softened distended ileum which was closed by a Lembert's suture. It was not more than a pin-prick and seemed to follow the application of a Spencer-Wells clip to a bleeding vessel in the neighbourhood. All the lower part of the ileum was reddened, soft, and hooded, as it were, over the cæcum and appendix which were in consequence, except for the tip of the latter, obscured from view. There was little if any fluid in the peritoneal cavity.

In Case 2 colectomy was done during the actual bout of intestinal obstruction which rendered its performance more difficult and led me to use a drainage-tube and gauze packing, as I had not implicit confidence in the condition of the distended bowel which was sutured. I had seen, too, in another case where the bone bobbin was used for a colectomy some slight fæcal leakage afterwards. The depth of the parts operated on would have made direct suture very difficult and have dangerously prolonged the time of operation. The successful issue of the case was largely due to the gauze drainage employed, as there can be no doubt that there was some little leakage from the bowel 10 days after the operation.

For the notes of the cases I am indebted to Mr. T. C. English.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

The Relation of Malignant to Rheumatic Endocarditis.

A MEETING of this society was held on April 8th, Mr. W. J. WALSHAM, the President, being in the chair.

Dr. F. J. POYNTON and Dr. ALEXANDER PAINE communicated a paper entitled, "A Contribution to the Study of Malignant Endocarditis." They had been led to study malignant endocarditis in the course of an investigation upon the pathogenesis of rheumatic fever. The relationship between the two diseases was, they believed, a very close one and this was especially true of certain cases of malignant endocarditis which were associated with a previous history of rheumatic fever and during the course of which rheumatic manifestations were apt to occur. Now that rheumatic valvulitis was known to be infective "malignant endocarditis" was, they thought, a more accurate term than "infective endocarditis." The question arose whether some of these malignant cases were not really rheumatic. The idea was not an original one but the possibility of complete proof had been heretofore impossible since an exciting cause of rheumatic fever had been unknown. The evidence in favour of such a cause being a diplococcus was now extremely strong and this seemed a fit occasion to investigate once more the relationship of these two diseases. The result of the present research had led them to the conclusion *that there was a group of cases of malignant endocarditis rheumatic in origin.* The chief reasons for this conclusion and for which evidence was adduced in this contribution were: (1) that clinical experience favoured the assertion and clinical cases were narrated in support of this statement; (2) that the study of the morbid anatomy of the diseases was also in its favour; and (3) that bacteriological and experimental investigations were also in accord with the view, because a diplococcus could also be isolated from cases of malignant endocarditis which could be grown in pure culture,

which would reproduce that disease in rabbits, and which resembled the diplococcus of rheumatic fever in its morphology and cultural characteristics. Moreover, the diplococcus of rheumatic fever would produce malignant endocarditis in rabbits on the one hand, and the diplococcus from certain cases of malignant endocarditis would produce rheumatic fever in rabbits on the other. Finally, every grade of valvulitis, from simple to malignant and *vice versâ*, could be produced by these two diplococci. A valuable series of macroscopical and microscopical specimens, lantern slides, and drawings were exhibited in support of these statements. The details of the investigations of Dr. Poynton and Dr. Paine were grouped under three headings: (1) clinical, experimental, and pathological observations: (2) histological details; and (3) bacteriological data. The clinical cases, seven in number, exemplified the type of endocarditis upon which they had been engaged and the gradations between it and rheumatic fever. The experimental investigations demonstrated the reproduction of malignant endocarditis; the transition of malignant endocarditis to rheumatic fever; the production of malignant endocarditis by the diplococcus of rheumatic fever; the production of rheumatic fever in a rabbit by inoculation with the diplococcus of rheumatic fever, and some months later malignant endocarditis by a second inoculation with the same organism; and lastly, some results of inoculation of rabbits with the "streptococcus pyogenes." Secondly, the histological details pointed to the wide distinction between the vegetations upon the cardiac valves in rheumatic valvulitis and those of malignant endocarditis. In the former no diplococci were present in the necrotic tissue; in the latter there were numerous diplococci in the necrotic tissue. Between these extremes there was every grade. The tendency of malignant endocarditis to occur in damaged valves was not, they thought, due to the affinity of the diplococci for such damaged tissues but to the lack of resistance of the damaged tissues. Thirdly, so far as they had ascertained, the two diplococci only differed bacteriologically in the smaller size and more rapid growth of the diplococcus in malignant endocarditis. These distinctions were not, in their opinion, sufficient to constitute diplococci as separate and distinct organisms. Allusion was made to the acid-producing properties of these organisms and the possibility that these properties played some part in the rheumatic processes. The concluding part of the paper dealt with observations upon rheumatic, rheumatoid, and septic processes. The difficulties of such an inquiry were very great, but the onus of proof that rheumatic fever might result from varied infections lay with those who upheld that view. Dr. Poynton and Dr. Paine did not think that rheumatic valvulitis was the only manifestation that might become malignant, but that both pericarditis and arthritis might also take this course. They desired to express their thanks to Dr. W. B. Cheadle and Dr. D. B. Lees for the clinical cases and to Mr. H. G. Plimmer for valuable advice and assistance.

The discussion of this communication was adjourned until the next meeting.

OBSTETRICAL SOCIETY OF LONDON.

Primary Tuberculosis of the Cervix simulating Cancer.—Exhibition of Specimens and Drawings.

A MEETING of this society was held on April 2nd, Dr. PETER HORROCKS, the President, being in the chair.

Dr. A. H. N. LEWERS read a paper on a case of Primary Tuberculosis of the Cervix simulating Cancer which he had treated by vaginal hysterectomy. The patient was a married woman, 36 years of age, who had never been pregnant. For nine months before she came under observation there had been a vaginal discharge which was blood-stained and slightly offensive. Bleeding had been noticed after coitus and also after using a vaginal syringe. She had had slight pain in the left iliac region for about five months. This did not appear to have been at all severe. The catamenia had been regular, lasting three or four days only, and not attended by any special pain. The patient's general health had been good up to 12 months before she came under observation. Then she found herself beginning to get weak and disinclined for exertion and to suffer from the local symptoms above mentioned. She did not think that she had lost flesh. One of her aunts had died from consumption but otherwise the family history was unimportant. On vaginal examination the condition of the vaginal portion of the cervix seemed to be identical with what was found in many cases of cancer. The vaginal portion appeared to be the seat of "a growth" which was friable and bled readily on examination. The uterus was freely moveable. Believing that the case was one of cancer of the cervix suitable for radical operation Dr. Lewers performed vaginal hysterectomy on Jan. 30th, 1896. The patient made a good recovery. He had seen her several times since and received a letter from her on Nov. 20th, 1901, in which she said that she "enjoyed fairly good health and had had no return of the bleeding." While she was in the hospital there was no evidence of any disease in other organs. When portions of the supposed malignant growth were sent to the Clinical Research Association for examination the report came back that there was no evidence of cancer but that the structure was tuberculous. Brief reference was made to the writings of Pozzi, Cullen, and Whitridge Williams, from which it appeared that primary tuberculosis of the cervix was an exceedingly rare condition.—Specimens of tuberculous disease of the body of the uterus, the cervix, and the vagina were shown by Dr. H. RUSSELL ANDREWS, Dr. WILLIAMSON, Mr. J. H. TARGETT, and Dr. E. O. CROFT, and were discussed in connexion with Dr. Lewers's paper.—Dr. M. HANDFIELD-JONES narrated a case which had come under his observation in which the patient, a multipara, aged 30 years, had suffered for several years with strumous disease of both hands. Several fingers and parts of the metacarpal bones had been removed at different times owing to the presence of tuberculous disease of the bones and joints. For months the patient had been suffering from excessive menstrual losses and in the intervals from a foul vaginal discharge. Examination showed that the cervix was deeply excavated by tuberculous ulceration and that the mischief had extended to the upper part of the vaginal wall on the left side. As the patient would not submit to any radical operation the ulcerated cervix was thoroughly scraped and then Paquelin's cautery was freely applied to the base of the ulcer. Cicatrisation followed and two years later the patient was found to be free from any further spread of tuberculous disease in the genital tract but she had commenced to develop tuberculous lesions in her lungs. The good effect of the curettage and the use of the actual cautery was very manifest and might certainly be used with advantage for cases in which extirpation of the uterus was deemed undesirable.—Dr. CROFT remarked on the importance and difficulty of diagnosing cases of tuberculous cervicitis. There was a closer resemblance of the symptoms in Dr. Lewers's case to those of cancer than in the case described by himself. Dr. Lewers's patient had had bleeding, pain, and some offensive discharge. Dr. Croft's patient had absolute amenorrhœa for many months, bleeding only taking place when examined. The growth was softer than in cancer and did not break away in the same crumbling manner. The papillary masses were easily detached and were more of the consistence of mucous polypi than of the vegetations of cancer. Dr. Croft on his first examination of the case concluded that the growth was not of the nature of any of the ordinary forms of cancer of the cervix, but he kept in mind the possibility of an early condition of botyroidal sarcoma, or myxoma of the cervix. The tuberculous nature of the lesion was, however, established by microscopical examination before operation was decided on.—In reply to a remark of Dr. LEWERS, Dr. CROFT said that tubercle bacilli had not been definitely demonstrated.—The PRESIDENT said he was surprised to hear that tubercle in the uterus in the majority of cases was confined either to the cervix or to the body, for in the only two cases that had come under his observation the whole mucous membrane from the os externum to the top of the uterus was affected and he had thus been led to think that tubercle differed essentially in this respect from cancer. Also in his own case and in Dr. Lewers's case the patients had never been pregnant. He was surprised to hear Mr. Targett say that it was easy to diagnose tubercle. Certainly it might be in the lungs, either clinically or post mortem with the naked eye, but in the tubercle of the uterus he thought it was difficult, and even where a piece had been cut out and investigated microscopically it had been pronounced to be sarcoma. He was under the impression that the specimen shown by Mr. Targett from the Guy's Hospital Museum was the same one to which he had

referred. The patient was in a medical ward and he (the President) had seen her and had diagnosed from the condition of the swollen cervix which seemed filled with ovula Nabothi a follicular inflammation of the cervix. She was transferred to the care of Dr. A. L. Galabin who cut a piece out and after careful microscopical investigation came to the conclusion that it was sarcoma and removed the uterus by vaginal hysterectomy. The whole of the uterine mucous membrane was greatly thickened and diseased throughout. It was examined at the Royal College of Surgeons of England by Dr. J. F. Goodhart and someone else and tubercle bacilli were found.—The paper was also discussed by Mr. TARGETT and Dr. J. M. MUNRO KERR, and Dr. LEWERS briefly replied.

Dr. J. S. FAIRBAIRN showed a Unilocular Ovarian Cyst containing in its wall large solid masses undergoing necrotic change. The cyst itself showed no evidence of any twisting of the pedicle and was, in fact, a sessile cyst enucleated from underneath the broad ligament. The solid masses were of a deep purple colour and thus projected into the interior as a number of rounded bosses; on section they were very firm and hard and cut more like a fibroma than the solid adenomatous structures of an ovarian cyst. When fresh they were full of blood and had an appearance very like that of liver. Microscopically they proved to be adenomatous with a papilliferous arrangement. There was a very extensive extravasation of blood with thrombosis of vessels into the necrosed parts. The partial necrosis affecting only the solid masses was somewhat difficult to explain. As there was some calcification at the base of the cyst this might have interfered with the blood-supply.

Dr. AMAND J. M. ROUTH showed a specimen of a Fallopian Tube ruptured towards its fimbriated end in two places. The patient was a multipara, aged 25 years, who when about six weeks pregnant was seized with collapse and all the signs of intra-abdominal hæmorrhage. When the abdomen was opened the peritoneal cavity was found to be full of blood and the ovum in its intact membranes was found to be adherent to the edge of a rupture on the posterior aspect of the right Fallopian tube near the fimbriated end. The tube was ligatured off and removed and was then found to be ruptured both anteriorly and posteriorly. The patient rallied well from the operation and made an easy convalescence. When examined the ruptured tube showed the following features. It measured seven centimetres in its long axis. At the cut uterine extremity it was normal in size for one centimetre of its length but its lumen was impervious. One centimetre from the cut end the tube widened out into a thin-walled sac, the distension reaching as far as the fimbriæ which appeared as so many finger-like processes proceeding from the sac; the abdominal ostium having been closed it was no longer traceable. The tubal gestation sac measured six centimetres in length by 2·5 centimetres in width through its greatest diameter. The sac tapered at either extremity, being more or less fusiform in shape. The walls of the sac had ruptured both anteriorly and posteriorly, the one tear in the distended condition measuring one centimetre by two centimetres, the other being two centimetres by two centimetres in extent. Both tears proceeded to within two centimetres of the fimbriated extremity of the tube.

Dr. ANDREWS, having shown a Photograph, two Drawings, and the Pelvic Organs from a case of Congenital, or rather Infantile Prolapse of the Uterus, associated with Spina Bifida, Dr. BLACKER commented upon the case.

Dr. WILLIAMSON showed a specimen of Umbilical Cord containing four umbilical arteries and only one umbilical vein.

Dr. F. J. MCCANN showed a specimen of a Tubal Mole.

MANCHESTER CLINICAL SOCIETY.—A meeting of this society was held on March 18th, Mr. Herbert Lund, the President, being in the chair.—Dr. R. W. Marsden exhibited the following cases: 1. A child with apparently pure Mitral Incompetence, compensation being perfect. The rapidity of the pulse was only slightly increased, its volume and tension being very good, and beyond a marked accentuation of the second sound in the pulmonary area there was no further evidence of change. 2. A girl with Mitral Obstruction and Incompetence, the former being the more marked lesion. The rapidity of the heart-beat and the signs of hypertrophy of the right ventricle showed the absence of any great amount of reserve power and was anticipatory of the occasional failure of compensation which occurred, though at the time it was perfect, as evidenced by the loud second sound in the pulmonary area and the absence of any signs of venous stasis. 3. A girl with Mitral Obstruction and Incompetence associated with adherent pericardium due to a previous attack of rheumatic pericarditis. 4. A boy with Mitral Incompetence and Adherent Pericardium. The previous pericarditis had apparently extended to the left innominate vein, producing partial obstruction, as there was dilatation of the veins on the left side of the neck, over the upper part of the chest on the left side, over the left shoulder, and the left upper arm.—Dr. W. K. Walls (for Mr. A. Wilson and himself) introduced a patient with Fibroma Uteri whose case presented several features of interest. Three months earlier the tumour caused much abdominal enlargement, there being multiple tumours, each of about the size of two fists, or of a fœtal head, and one such occupied almost the whole of the pelvic cavity and caused the perineum to bulge considerably. The cervix could just be reached high up above and behind the symphysis pubis. The patient was, too, according to history, some four months pregnant but the physical signs of this were not clear owing to the fibroid complication. Nothing operative was done because of a recent and active infection with syphilis, and treatment was directed to this. A month previously premature labour came on spontaneously and a putrid six months' fœtus was delivered by Dr. Walls with difficulty. In showing the convalescent patient to the society Dr. Walls drew special attention to the rapid involution of the tumours post partum. The retro-vaginal tumour was rather less than a Tangerine orange in size and the other masses were diminished in corresponding degree, the uterus and tumours together being now entirely pelvic.—Mr. Stanmore Bishop showed an unusual case of Multilocular Ovarian Cystoma. He remarked that ovarian cysts were usually easy to diagnose and to treat, since they most commonly developed upwards into the general abdominal cavity and therefore did not disturb the relations of the parietal peritoneum, but that occasionally, as in this case, they appeared to develop downwards, separating the broad ligament folds, and embedded in the connective tissue beneath raised in their growth the pelvic peritoneum and the organs with which it was in more intimate relation. The patient, aged 54 years, was seen with Mr. G. Knapton of Moss Side in October, 1901. The emaciation of her chest and limbs contrasted characteristically with the enormously distended abdomen on the upper half of which well-marked veins were to be seen. Dulness on percussion was found over the whole of the abdomen, extending to the renal dulness in the right flank and leaving only two points at which resonance could be obtained—viz., just below the xiphoid cartilage and very posteriorly in the left flank. A thrill could be obtained extending right across the abdomen. The possibility of an immense hydronephrosis was considered, but this view was rejected because there had never been any symptoms connected with urination and the urine itself was normal. The doubt, however, somewhat unpleasantly recurred during the operation, when it was found that the mass extended far upwards behind the ascending colon. On Nov. 20th abdominal section was performed and the tumour, which was cystic and multilocular, was enucleated from behind the pelvic and abdominal peritoneum. The main cyst contained 27 quarts of fluid. Over it the cæcum with an appendix six inches in length and hypertrophied to the size of the little finger was found. The appendix was amputated. The large cavity left was partially obliterated by the falling back of the internal organs, the remainder being drained by gauze which was removed gradually during the next six days. The patient made a good recovery, but on Dec. 16th paralysis of the left arm and leg supervened with a large and deep sacral bedsore. These however, gradually improved, and on Jan. 19th, 1902, the patient left the surgical home with the bedsore healed but with some paralysis still remaining.—Dr. T. Arthur Helme read a paper upon Abdominal Section with Primary Tuberculous Peritonitis and Ascites and made some remarks on the differential diagnosis in such cases.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—The sixth meeting of the forty-sixth session of this society was held on April 4th, Dr. T. C. Meggison, the President, being in the chair.—Mr. Bellamy Gardner opened a discussion on Anæsthetics in the course of which he recommended the use of a mixture of chloroform one part with ether two parts, administered upon a Rendle's mask, as being the safest and

most convenient and suitable anæsthetic for use in general practice. He was under the impression that chloroform was more often used outside the hospitals than was supposed and that it would be of great advantage bearing in mind the difficulty of ether administration to urge the use of the mixture referred to on account of the lesser danger of the second stage of narcosis. Under the influence of chloroform alone so many fatalities had occurred after the struggling and it was to this factor that Mr. Gardner wished particularly to direct attention. It was his very strong belief that if no asphyxial factor was ever allowed to arise during chloroform narcosis the mere accurate adjustment of the dose was a very simple matter; but that, on the other hand, chloroform being a cardiac paralysant and asphyxia acting also secondarily upon the heart a very moderate degree of the latter turned the scale and produced the depression so commonly spoken of as due to chloroform vapour. Unrecognised obstruction to breathing was in his opinion the cause of most of the fatalities.—The President referred to the danger of conversation being carried on in the hearing of the patient while being anæsthetised as it might cause struggling.—Dr. F. S. Toogood said that he had had about 6000 cases of anæsthesia during the last seven years with only one death. He considered that more depended on the experience of the anæsthetist than on the method adopted. A patient's behaviour under ether often disclosed the fact if he were addicted to drink. Ethyl chloride might be given with a mask and had a longer effect than nitrous oxide. He had done colotomies with eucaine but lately he had found that injection of distilled water had as much effect.—Mr. W. H. Payne considered that the eye reflex was not to be depended upon as a sign of general anæsthesia. The reflex of the inner side of the thigh was more reliable. Patients should not be forcibly held down.—Dr. F. Taylor said that he generally used the A.C.E. mixture with Rendle's mask, but he found that the ether disappeared very rapidly and left the chloroform behind.—Dr. J. P. Henry described some operations which he had seen performed at the Beaujon Hospital at Paris by Dr. Tuffier while the patient was under the influence of cocaine injected into the arachnoid sheath of the spinal cord.—Staff-Surgeon W. W. Pryn, R.N., described a case which he had had where death nearly resulted from chloroform having been put by mistake in the bottle containing the A.C.E. mixture.—Dr. J. H. Keay said that it was very rare to have a death from anæsthesia during labour. He considered that there was a great future for local anæsthesia. He remembered when there were eight deaths under chloroform in a short time in Manchester.—Dr. T. E. White said there was no doubt that more accidents occurred with small operations than big ones but that was probably due to less care. He nearly had a death from bichloride of methylene about 15 years ago.—Dr. W. Pitt-Payne described a case where a patient nearly died under gas and ether. An effectual way of preventing laryngeal spasm was to draw forward the tongue with tongue forceps.—Mr. Joscelyn inquired whether putting down the head was of any use in cases where the heart failed.—Mr. Gardner said that he agreed that there should be no talking. He did not think that the alcohol was much good in the A.C.E. mixture. Pinching the thigh was an excellent test. Persistent vomiting occurred in cases subjected to Tuffier's method. This seemed to be due to increase of pressure in the spinal canal.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 25th, Dr. H. J. Campbell being in the chair.—Dr. F. W. Eurich showed a series of sections illustrating Cirrhotic Changes in the Livers of Pigs.—Dr. T. Jason Wood showed the following specimens: (1) Ova and Embryos of Bilharzia Hæmatobia from the Urine of a Patient; (2) the Urinary Organs from a case of Primary Cancer of the Male Urethra; (3) Double Pyosalpinx removed by operation; and (4) Uterus removed for Procidentia.—Dr. Campbell showed a Liver the seat of numerous abscesses probably of amœbic origin.—Dr. R. H. Crowley showed the following specimens: (1) Membranous Colitis; (2) Carcinoma of the Rectum with Secondary Deposit; (3) Perforation of a Typhoid Ulcer in a portion of the Ileum which had been constricted by a Meckel's Diverticulum; and (4) Gumma of the Brain.—Mr. C. F. M. Althorp showed a specimen of Hydatidiform Mole.—Dr. Crowley read notes on a case of Cortical Gummatous Meningitis. The patient was a woman, 50 years of age, who complained in October, 1899, of severe headache and vomiting. In June, 1900, she had several fits with convulsions involving the left arm and face, but with no loss of consciousness. Examination revealed tenderness to percussion in the right frontal and parietal regions with some muscular weakness of the left side of the face. There was commencing optic neuritis on the right side. Under iodide of potassium she improved sufficiently to go to a convalescent home in July. On August 15th she was admitted to hospital again with headache and vomiting and twitching of the mouth on the left side. Iodide of potassium was again given together with mercury, and by Nov. 1st she was well enough to go home. She relapsed again in about a month and again improved under treatment. In May, 1901, the headache was still bad and there was some return of the twitching and of the vomiting; this time no improvement took place under treatment. In July, 1901, Mr. J. B. Hall trephined, but no tumour susceptible of removal was found. The headache and vomiting were completely relieved by the operation, but three weeks afterwards there was almost complete paralysis of the left side of the body. She died six months after the operation. Post-mortem examination revealed an extensive tumour occupying the surface of the brain and involving the frontal and parietal regions. It was quite adherent to the dura mater and had penetrated far into the brain substance. Apart from this the brain was normal and there was no meningitis. Dr. Crowley discussed the point as to whether an earlier operation should have been undertaken. He considered that in such cases the symptoms were due not merely to a localised gumma but to syphilitic changes in the surrounding vessels, and consequently that a curative operation was not likely to be successful.—The case was discussed by Dr. Campbell, Dr. A. C. F. Rabagliati, Dr. Wood, and Dr. J. Metcalfe, and Dr. Crowley replied.—Mr. W. H. Horrocks, jun., read notes on a case of Abdominal Pregnancy which had been successfully treated by laparotomy. The fœtus and membranes were shown as was a cast of the uterine cavity which had been passed a few days after the operation.—Mr. Philip E. Miall read a paper entitled "Protagoras on Medicine."

GLASGOW SOUTHERN MEDICAL SOCIETY.—A meeting of this society was held on April 3rd, Dr. John Stewart, the President, being in the chair.—The discussion on the Curability of Phthisis Pulmonalis which had been adjourned at the previous meeting of the society was resumed by Dr. Ebenezer Duncan. In an interesting manner Dr. Duncan reviewed the treatment of pulmonary consumption in the earlier part of the nineteenth century and pointed out that the open-air treatment—so much lauded to-day—was advocated in England by Dr. George Bodington as early as the year 1840. Speaking particularly of the curability of phthisis Dr. Duncan gave a detailed account of cases which he had seen in private practice and in hospital in which undoubted cures had taken place. He had known patients to be completely restored to health and strength in whom there had been found all the signs of consolidation and excavation of the lungs and in whom the tubercle bacilli had been found abundantly in the sputum. Particular examples were described in which even in a short space of time remarkable improvement had taken place. With regard to treatment he believed that a persistent germicidal course was very efficacious indeed. Carbonate of guaiacol in large doses was of great service and he often gave creasote and cod-liver oil (five minims in one drachm of oil). He strongly recommended inhalations of pinol and eucalyptol, and in the absence of catarrh of the bronchi he used formalin in from 10 to 20 per cent. solutions. As regarded diet he believed in high feeding. In addition to the ordinary diet his patients received four pints of milk per day. He believed in the advantages to be gained by the open-air treatment and he carried it out systematically in his practice.—Dr. Thomas Forrest remarked that when hæmoptysis was present the effect of treatment seemed to be more beneficial and the same result was found in phthisical patients with the rheumatic diathesis. He was inclined to think that by over-feeding there was some danger of nephritis.—Dr. T. Kirkpatrick Monro spoke of the different types of pulmonary phthisis in which experience had shown that a favourable prognosis might be given and cited the hæmorrhagic form as an example. He gave the details of some cases that had come under his observation in which recovery had taken place in a remarkably

short period of time.—Contributions to the debate were made by Dr. W. Watson, Dr. A. S. Tindal, Dr. J. Coulson Howie, and Dr. T. Russell.—The President in a short speech reviewed the discussion and remarked that from the evidence laid before them the conclusion seemed to be that only to a limited extent could phthisis pulmonalis be regarded as a curable disease.

ROCHDALE AND DISTRICT MEDICAL SOCIETY.—A meeting of this society was held on April 3rd.—Mr. Herbert Lund read a paper on Failures and Successes in Urinary Surgery. He described cases illustrating the difficulty caused by a large lacuna magna in catheterising and also in the treatment of gonorrhœa, the distensibility of the female urethra for the removal of calculus, the evils of white wax in urethral bougies, and the advisability of sounding the bladder when performing circumcision in children. The dangers attendant upon even such a simple operation as circumcision were emphasised by reference to the case of an elderly man who had cerebral hæmorrhage with hemiplegia the day after the circumcision was performed. As regarded enlarged prostate careful catheterism was usually sufficient to give relief. The advantage of operation was immediate and only transient. Freyer's operation probably really consisted in the removal of an adenomatous mass which compressed the prostate. The suprapubic operation was the best in all cases of vesical calculus. Syphilitic ulceration of the bladder might be difficult to diagnose but it yielded to grey powder and iodide of potassium. Varicocele was best treated by the open method with excision of a length of vein. The most certain cure for hydrocele was excision of the sac. All these points were illustrated by reference to actual cases, and Mr. Lund also mentioned cases of renal calculus, hydatids of the kidney, and a case of intermittent hydronephrosis treated by nephrorrhaphy in which a large granulating surface was left and the patient was kept at rest in the dorsal position for three weeks with a successful result.—The President (Mr. R. Burdett Sellers), Dr. J. Melvin, Mr. W. Stanwell, and Dr. W. J. Kerr, made remarks, and Mr. Lund was warmly thanked for his interesting paper.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on April 4th, Dr. Arthur T. Davies, the President, being in the chair.—The President showed a specimen of urine from a healthy man which gave in a marked degree the nitric acid reaction with potassio-indoxyl sulphate.—Dr. H. P. Miller showed a specimen of Thoracic Hernia removed from a child, aged two and a half years, who died 10 hours after the initial symptom, vomiting. The hernia consisted of eight feet of large and small intestine that occupied the left thorax, displacing the heart to the right side of the mesial line. It occurred through an oval, smooth-edged, elastic opening, about one and a half inches in its longer diameter and about three-quarters of an inch in its smaller diameter, in the left leaf of the diaphragm about the lateral centre and towards the spine. There was no known strain to account for this condition. The small bowel was deeply congested.—Dr. B. G. Morison opened a discussion on the Management of the Third Stage of Labour. He held that no time-limit could be fixed before the uterus should be pressed to extrude the placenta, supposing that hæmorrhage did not take place then. But, roughly, a wait of 20 minutes was advisable before an attempt should be made to express the placenta. He objected to traction on the cord as a means of removing the placenta. Douching, vaginal or uterine, after a simple confinement he held to be unnecessary, while if a lacerated perineum were present he believed that the procedure was positively harmful. If the latter state were present a suture should be put in deeply. The suture he used was one of strong carbolised catgut. He held it to be important that when sutures were used they should be left for a week.—A general discussion followed.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The seventh meeting of this session was held on April 4th, Mr. Alfred Cooper, the President, being in the chair.—The President announced that Sir Frederick Treves would deliver the Cavendish Lecture on June 20th and that its title would be "Some Phases of Inflammation in the Vermiform Appendix."—Dr. J. Allan read a paper on the Treatment of Malignant Disease by Electrical Currents of High Potential and Frequency.—Dr. A. Whitfield read a paper on a case of Peculiar Intolerance of the External Application of Mercury.—Dr. A. Mortimer read a paper entitled "Remarks on 1000 Anæsthetisations," most of which had been given by him during the past two years.—A discussion followed the reading of each paper.

Reviews and Notices of Books.

A Manual of the Practice of Medicine. By GEORGE ROE LOCKWOOD, M.D., Attending Physician to Bellevue Hospital, New York. Second edition, revised. With 103 Illustrations. London and Philadelphia: W. B. Saunders and Co. 1901. Pp. 847. Price 17*s.* net.

THIS text-book is probably better known in America than in England. In his preface the author states that his aim has been to present the essential facts and principles of the practice of medicine in a concise and available form. Dr. Lockwood has succeeded fairly well in his endeavours and a readable and trustworthy manual is the result. We especially notice that the author has evaded the fault which we have noticed in so many of the American text-books—namely, the needless sub-division of the systemic diseases. To adopt the classification followed by some authors of dividing diseases of the stomach, for example, into a large number of sub-groups, the differences being based on small pathological distinctions, can only prove confusing to the student and is of no practical clinical value. Dr. Lockwood has been wise in arranging the subject matter according to the admirable classification of Dr. Osler.

The etiology, pathology, symptoms, physical signs, complications, prognosis, and treatment of the various diseases are well described but the remarks on diagnosis are decidedly weak and the reader will search in vain for paragraphs on differential diagnosis. The clinical points are, however, well brought out and the student by comparing the accounts of the various conditions which may simulate each other should, as a rule, have no difficulty in coming to a conclusion as to the disease with which he is dealing. We would suggest, nevertheless, to Dr. Lockwood that in future editions more attention should be given to the subject of diagnosis.

The author remarks that in preparing this edition the whole book has been subjected to a thorough revision. Many portions have been entirely rewritten and a number of new subjects have been introduced. Among the new sections may be mentioned those on Bubonic Plague, Gastroptosis, and Reichmann's Disease. An account of the analysis required for the clinical investigation of gastric affections has also been supplied. Dr. Lockwood retains lobar pneumonia amongst the diseases of the respiratory system, although he defines it as "an infectious disease due to the diplococcus pneumoniæ." We prefer the more modern plan of placing a description of the disease amongst the "infectious diseases." If Dr. Lockwood's classification were to be followed throughout typhoid fever would have to be placed amongst diseases of the intestine.

The section on Diseases of the Nervous System is well written and the clinical descriptions are easy to follow. The pathology of the various diseases is briefly given but the student is not perplexed by an elaborate discussion of theoretical or contested matters. The various illustrations are beautifully reproduced and aid considerably in explaining the letterpress.

Thomas Henry Huxley. By EDWARD CLODD. Edinburgh and London: William Blackwood and Sons. 1902. Pp. 226. Price 2*s.* 6*d.*

WE have read this volume, which is one of the "Modern English Writers" series, with great interest. It gives the reader a realistic and striking picture of a man of great intellectual force and character who played many parts and

always with distinction, and who occupied a very prominent and deservedly high position in the scientific and literary world. It is not too much to say that in whatever relation he is regarded Huxley united in himself a singular combination of qualities. He was a bold and original thinker who always kept in mind that the end of philosophy is the detection of law and unity in seeming multiplicity and discord and who strove to penetrate to the core of things and to follow no arbitrarily devised system or authoritative teaching but to trace out for himself the natural meaning and significance of the facts and of all of them. Huxley manifestly had great intellectual honesty and courage and a singularly clear and robust style of thinking and writing. Nor was this all, for he was in no wise lacking in imagination and humour and he was full of that sense of pitifulness which, like subsoil-water, underlies the surface of most strong and noble natures. He was essentially combative, it is true, but much of this may be accounted for by the force and sincerity of his convictions and the truthfulness of his character, his conflict with adverse circumstances in early life, and his chronic ill-health.

In this small volume we have presented to us a study of Huxley in his different aspects as regarded from various standpoints: the man, the discoverer, the interpreter, the controversialist, and the constructor. Taking it as a whole we think an admirable sketch has been given of him. There is no need to allude to Huxley's great services to science, or to his literary productions and style of writing, for these are already well known to our readers. As Mr. Clodd says in his brief preface, he has made large draughts from the materials supplied by Mr. Leonard Huxley in his very admirable "Life and Letters" of his father and from Huxley's own writings. We notice that some exception has been taken to the nature and treatment of the section devoted to the description of Huxley as a controversialist, but to have omitted it altogether or to have toned it down and emasculated it would have been tantamount to giving a most imperfect sketch of him. The ways in which men like the late Mr. Huxley and Sir James Paget, for example, would view everything relating to the spiritual faculties of man are, and always must be, different, but as this section does not properly fall within the purview of the medical or scientific journalist we are not called upon to notice it further.

Manual of the Diseases of the Eye for Students and General Practitioners. By CHARLES H. MAY, M.D., Chief of Clinic and Instructor in Ophthalmology, Eye Department, Columbia University, New York. Second edition, revised. With 275 Original Illustrations and 36 Coloured Figures. New York: William Wood & Co. 1901. Pp. xiii. and 408. Crown 8vo. London: Baillière, Tindall, and Cox. Price 8*s.* 6*d.* net.

THIS is a compendious and well-written text-book that may be taken as a companion to any systematic course of lectures on the eye. The author has had large experience in teaching and judiciously directs the attention of the student to the more important features of each form of disease. In testing the vision of illiterate persons he uses the letter E placed in various positions. We doubt whether this is superior as a test to the letter C suggested by Landolt. In the present edition a useful plate has been added showing the different organisms which are found in the chief forms of conjunctival, corneal, and lacrymal affections. The opportunity is thus afforded of comparing the gonococcus micro-organism with the pneumococcus, Koch-Weeks bacillus, the Morax-Axenfeld diplobacillus, the streptococcus, and the diphtheria bacillus as they are respectively seen under a magnifying power of 950 linears. As in all recent ophthalmological works the subjects of errors of refraction and of disturbances of motility are remarkably well given. The illustrations, both coloured and uncoloured, are unworthy of the text and might with advantage be replaced by other and better ones.

A Handbook of Hygiene. By A. M. DAVIES, M.R.C.S. Eng., L.S.A., D.P.H. Camb., Lieutenant-Colonel R.A.M.C., late Sanitary Officer and Bacteriologist Army Headquarters, India; late Assistant Professor of Hygiene, Army Medical School, Netley. Second edition. London: Griffith and Co. 1901. Pp. 624. Price 8*s.* 6*d.*

THE first thing which will strike the ordinary observer on seeing this volume is that it has an unusually attractive appearance—a red leather cover, rounded corners and gilt edges—evidently a book for the pocket. A study of the contents confirms this view. The information is given in condensed form. It is not a text-book for the student but it is essentially the book on hygiene for military or civil practitioners serving abroad. The first edition appeared in the year 1894 and the principal alterations which are to be found in the present edition are in the sections which treat of the sanitary aspects of air, water, and food, soil and sewage disposal, and the causation and prevention of disease. Speaking generally, it may be said that the book has been brought well up to date and it is quite exceptional to find a statement so erroneous as that on p. 123, where the Chadwell spring of the New River Company is credited with yielding 4,500,000 gallons of water daily. This great yield of water was before the time at which the "crack in the basin" unfortunately occurred. Although the book is not designed as a text-book of hygiene an advanced student might very profitably read it through when he begins to study the subject in order to gain a general idea of the outline of the problems with which he has to deal. The book would also be a good one for some men to read rapidly through just before they go in for one of the higher examinations in hygiene. The work will, however, prove most useful to those actually and actively employed in appointments dealing with questions of public health, and for such we know of no better work; the subject matter is good and the advantages to which allusion has already been made—the portability and general get-up of the volume—are likely to be appreciated.

LIBRARY TABLE.

Tables of Organic Materia Medica for Medical Students. By WILLIAM WOOD, M.B., C.M., M.R.C.P. Edin., Lecturer on Materia Medica and Therapeutics, Edinburgh School of Medicine. 1902. Quarto, pp. 215. Edinburgh: The Medical Supply Association.—These tables have been arranged to help students who are revising their materia medica prior to examination and for such purpose they are in every way suitable. They should not be allowed to take the place of a recognised text-book, however, during the period of the regular lectures and the author has therefore supplied his readers with a blank page opposite to each table so that supplementary notes from lecture or text-book may be made. There are four columns in every table—(1) Name of Plant, (2) Part Used, (3) Preparations, and (4) Actions and Uses. In the second column, where crude drugs are referred to, the dose for internal use is also stated, and in many cases these doses are unofficial but perhaps useful for examination purposes. In the column of Actions and Uses we find many useful summaries. In some cases these are excellent, concise, and carefully worded; in others they are not so good. There is no mention of the soporific effect of apomorphine, though only a short time ago a large number of correspondents of the medical journals recorded instances of the value of the drug in that connexion. Under the heading of the Uses of Coca the author says that the truth of the statement that the leaves of coca, when chewed, enable persons to undergo great muscular exertion with little fatigue is exaggerated, and that athletes and others have tried this drug with

disappointing effects. The late Mr. William Martindale, who made a very special study of coca and cocaine, was of opinion that coca does enable a great amount of fatigue to be borne with but little nourishment and that it does lessen the breathlessness caused by severe exertion, especially during mountaineering. There have been numerous accounts of walking feats in which coca has been used for its sustaining qualities and in 1893 during the army manœuvres great benefit was reported from its use. For the exact references we may refer the reader to the Extra Pharmacopœia. The only serious fault which we find with the book is the lack of a good index. There are indexes of various kinds, but they are scarcely satisfactory. Otherwise the book seems to us to be eminently suitable for its purpose and we recommend it to students.

A Concise History of Small-pox and Vaccination in Europe. By EDWARD J. EDWARDES, M.D. Lond. London: H. K. Lewis. 1902. Pp. viii. and 142. Price 2*s.* 6*d.* net.—This is a most admirable little book and a mine of information. It is, with the exception of the preface and a few closing words, simply a record of facts. If anything could convince an anti-vaccinationist of the idiocy of his belief it would be a perusal of this book, but as it is perfectly hopeless to argue with such persons in any way but those occasionally reported from that home of liberty and democracy the United States—namely, vaccination at the revolver's mouth—we will pass on to recommend all the clergy, the squires, and others who have it in their power to influence their neighbours to get Dr. Edwardes's book and to study its facts and figures.

The Underground Watering of Plants and Gardens. By the Holder of the Silver Medal of the Royal Agricultural Society of Ireland, &c. London: Ward, Lock, and Co. Pp. 77. Price 1*s.*—The author of this curious little book teaches that the surface watering of gardens is a great mistake and that it leads to an enormous waste which tends to cause water-famine among the poorer population of towns and cities. He advocates the use of certain "bamboo water-spears" of his own invention and asserts that they tend to lessen the quantity of water necessary for the support of plant life. We have not seen the instruments recommended, which may possibly possess the virtues attributed to them. The chief interest in the book consists in the fact that its author expresses clearly the views generally maintained by the engineers of the metropolitan water companies in regard to the wicked waste of water given to trees and flowers. "How great," says our author, "is the contrast presented between the wasteful extravagance of men who raise fresh loans on the rates to bring more water from the Welsh and Cumberland lakes, instead of economising the water already at their disposal, and the thrift of the Almighty, by whose wise providence wasteful exhaustion of the underground stores of moisture is prevented! Should we not take a lesson from this wise thrift of the Almighty by putting a stop to the enormous waste of water which goes on in consequence of surface watering in hot, dry weather in the many gardens by which our towns and cities are surrounded!"

Hindustani Self-taught with English Phonetic Pronunciation, containing Vocabularies, Idiomatic Phrases and Dialogues, Travel Talk, Military, Legal, Religious, Commercial, Shooting, Fishing Terms, Money, Weights, Measures, Indian Titles, Castes, Festivals. By C. A. THIMM, F.R.G.S. London: G. Marlborough and Co. 1902. Pp. 100. Price 2*s.*; bound in cloth, 2*s.* 6*d.*—We have turned over the pages of this little book from cover to cover, have lingered over some of them in doing so, and have arrived at the conclusion that it is what it pretends to be and that it fulfils what its title sets forth. It is surprising what a number of words, brief sentences, and information the author has contrived to bring together, to compress, and to arrange within a small compass in order to make easy the way of those desirous of acquiring some useful and available knowledge of Hindustani. We can recommend the book to those for whom it is intended. Officers and others proceeding to India will find it a very useful companion on the voyage out. Much successful ingenuity is shown in the English phonetic pronunciation of Hindustani but, speaking from our own experience, we have found it very difficult to acquire the pronunciation of any foreign tongue in this way; in the case of Hindustani a comparatively short residence in the country, however, will do all that is needful in this respect. The thing is to try to get a general idea of the language, a good vocabulary, and to let no shyness stand in the way of attempting to use it; listening to the talk of natives and others conversant with Hindustani will soon do the rest.

The Annual Charities Register and Digest for 1902, with an Introduction by C. S. LOCH. London: Longmans, Green, and Co. 1902. Pp. cxcvi.–746. Price 4*s.*—Aristides, it will be remembered, was ostracised and one Athenian gentleman voted against him because he was tired of hearing him called the Just. We feel much the same sensations that must have actuated Aristides's fellow-citizen when "The Annual Charities Register" makes its appearance. It is so good that we have an almost irresistible idea to say something unkind about it. Mr. Loch's introduction is an admirable piece of work; in the body of the book the seeker after knowledge will find an account of every charity which is worthy of support and the index to the work is a model of what an index should be. In no object is zeal according to knowledge more necessary than in alms-giving, and this Register and Digest will tell any person who wishes to be charitable where he may expend his alms to the best advantage. We must mention the one blemish that we have found and that is that in the list of "spiritual institutions" there are some which have no earthly right to the name of charity.

The Medical Annual and Practitioner's Index, 1902. Bristol: John Wright and Co. Pp. 774. Price 7*s.* 6*d.*—The twentieth issue of this most useful year-book is in no way behind its predecessors. A glance at the list of contributors will show that the editor of the work has selected those well qualified to help him. Few, indeed, are the subjects upon which the busy practitioner will not find some information in this book. One of the articles which will be found most interesting is that by Dr. T. N. Kelynack on the outbreak of arsenical poisoning in the north of England in 1900. The article is well illustrated by coloured and other pictures. Another very good and simply written article is that by Mr. A. St. Clair Buxton on Errors of Refraction and Accommodation. Part II. of the book is a *précis* of legal decisions on matter interesting to the medical profession given during 1901, and there are also accounts of new inventions, together with lists of inebriate homes and other institutions and of books published during the year 1901.

John Bull: His Origin and Character and the Present Condition of His Big Property, and Two Other Papers on Education. By CECIL REDDIE. London: George Allen. 1901. Pp. 76. Price 6*d.*—"Pages of ephemeral verbiage" is good. For the expression we are indebted to Mr. Cecil Reddie. It fittingly describes the essays contained in this little volume.

Profitable Fruit-growing for Cottagers and Small Holders of Land. (Gold Medal Essay.) By JOHN WRIGHT, V.M.H., F.R.H.S., late Editor of the *Journal of Horticulture.* London: W. H. and L. Collingridge. 1901. Pp. 127. Price 1*s.*—This is an enlarged and revised edition of an essay on profitable fruit-growing which obtained the gold medal and prize offered by the Fruiterers' Company in the year 1889. The present is the sixth edition which has been published—a fact which clearly shows that the work as been

appreciated. The little book contains much useful information, is well illustrated, is clearly printed, and has a good index. The author holds the cheerful views in regard to profits which are usually entertained by successful writers on gardening but which are unfortunately less frequently held by the owners of orchards.

JOURNALS AND MAGAZINES.

Journal of Experimental Medicine. Edited by WILLIAM H. WELCH, M.D. Baltimore. Vol. VI., No. 2. Issued Feb. 5th, 1902.—Dr. S. J. Meltzer and Dr. W. Salant contribute a paper on the Effects of Subminimum Doses of Strychnine in Nephrectomised Rabbits, which is commented on in another column. Dr. James Ewing writes an important communication entitled "A Contribution to the Pathological Anatomy of Malarial Fever." Amongst other conclusions at which he arrives is the one that it is frequently impossible to distinguish between the pigment deposits of malaria and those resulting from increased globulicidal activity of the serum in other diseases. The plates attached to Dr. Ewing's contribution are excellently reproduced. Mr. E. B. Vedder and Mr. C. W. Duval (research students in the Rockefeller Institute of Medical Research) report the results of an investigation into the Etiology of Acute Dysentery in the United States. The main conclusion at which they arrive is that the cause of acute dysentery, whether sporadic, institutional, or epidemic, is the bacillus dysentericæ of Shiga.

Middlesex Hospital Journal.—The issue of this journal for February contains the conclusion of an interesting article by Mr. C. Roberts on Surgery in the Boer War. The account given of wounds of the spinal cord is particularly noteworthy. The symptoms derived from such injuries were naturally most distressing and little could be done in the way of operations to relieve the condition. Mr. Roberts also describes lesions of the peripheral nerves due to bullet wounds. Extraordinary instances were met with in which a nerve as small as the median was pierced longitudinally by a Mauser bullet without being completely divided transversely. Dr. C. Price-Jones contributes an article on Methods of Hæmoglobin Estimation and details Haldane's modification of Gowers's hæmoglobinometer which obviates the defects connected with the use of artificial coloured solutions and tinted glass. "Some Definitions" by H. G. K. Y. are amusing. "Examination Hall" is defined as "an unattractive riverside resort where examiners take in paying guests." A "lecture" is stated to be "a learned soliloquy frequently productive of deep sleep."

Journal of Anatomy and Physiology. Conducted by Sir WILLIAM TURNER, K.C.B., F.R.S., D. J. CUNNINGHAM, F.R.S., G. S. HUNTINGTON, F.R.S., A. MACALISTER, F.R.S., and J. G. M'KENDRICK, F.R.S. Vol. XXXVI., New series, Vol. XVI., Part III. April, 1902. Pp. 110. Price 6s. London: Charles Griffin and Co.—The articles contained in his part are: 1. On the Development of the Head Muscles in the Newt, by F. H. Edgeworth, M.B. Cantab., B.Sc. Lond., assistant physician to the Bristol Royal Infirmary. This article is illustrated by many drawings in the text. It is too intricate to abstract, but one of the incidental results of Dr. Edgeworth's observations is to show that he segmental value of the cranial nerves is to be determined rather by the morphological position of the muscles that they innervate or "represent" than by their arrangement in the mid and hind brain. 2. The Separate Functions of Different Parts of the Rima Glottidis, by W. A. Aikin, M.D. Brux. The account here given contains some novel points due to Dr. Aikin having had exceptional opportunities of examining the movements of the larynx and his views are illustrated by two plates. 3. On an Unusual Form of Nasal Bone in a Human Skull, by W. L. H. Duckworth, M.A. The subject of the article was an ancient Egyptian. Mr. Duckworth also gives (4) a Note on the Irregularities in the Conformation of the Post-orbital Wall in Skulls of Hylobates Mülleri and of an Aboriginal Native of Australia. 5. An Ischiopagus Tripus (human), with special reference to the Anatomy of the Composite Limb, by James F. Gemmill, M.A., with two plates. 6. A Rare Anomaly of the Aortic Arch, by R. Stanley Taylor of Downing College and J. M. P. Grell of Selwyn College, Cambridge. 7. Anomalies in the Cervical and Upper Thoracic Region, involving the Cervical Vertebræ, First Rib, and Brachial Plexus, by Lawrence Dukes, B.A., and S. A. Owen, B.A., of Trinity College, Cambridge. 8. A Contribution to our Knowledge of the Chemistry of Red Bone Marrow, by Robert Hutchison, M.D. Edin., and J. J. R. Macleod, M.B. Aberd. 9. Twelfth Report on Recent Teratological Literature, by Bertram C. A. Windle, M.D. Dub. 10. On the Homologies of the Cerebral Sulci, by G. Elliott Smith, M.D. Sydney. 11. The Proceedings of the Anatomical Society of Great Britain and Ireland.

Journal of Physiology. Edited by Sir MICHAEL FOSTER, K.C.B., F.R.S., and J. N. LANGLEY, F.R.S. Vol. XXVIII., Nos. 1 and 2. March 27th, 1902. London: C. J. Clay and Sons. Price 11s.—This part of the *Journal of Physiology* contains the following communications: 1. A Further Research into Fatigue of the Central Nervous System when caused by Electrical Stimulation, by A. G. Levy, M.D. Lond., with eight figures in the text. 2. Path of Impulses for Inhibition under Decerebrate Rigidity, by A. Fröhlich, M.D., and C. S. Sherrington, M.D. Cantab., F.R.S. The path occupies a small, fairly limited area of the cross section of the cord. 3. Some Effects of the Ligature of the Renal Arteries in the Frog, by A. P. Beddard, M.D. Cantab. 4. The Effect of Local Injury upon the Excitatory Electrical Response of Nerve, by Francis Gotch, D.Sc. 5. The Innervation of the Frog's Stomach, by Walter E. Dixon, M.D. Lond., with 13 figures in the text. 6. Some Experiments on the Functions of the Medulla of the Kidney, by Francis D. Boyd, M.D. Edin. 7. The Relationship of the Spleen to the formation of the Blood Corpuscles, by D. Noel Paton, M.D., F.R.C.P. Edin., G. Lovell Gulland, M.D., F.R.C.P. Edin., and J. S. Fowler, M.D. Edin., with 10 figures in the text. The conclusion at which these observers arrive is that in the animals which they examined—dogs, cats, and rabbits—there is no evidence that the spleen has any important action as a blood-forming organ. 8. The Influence of Subcutaneous Injections of Large Quantities of Dextrose on the Metabolism in the Dog, by James Scott, M.D. Edin. It increases it. 9. Note on the Absorption of the Nitrogen of Oatmeal by the Dog, by D. Noel Paton. 10. On the Residual Pressures in the Vascular System when the Circulation is Arrested, by Leonard E. Hill, M.B. Lond., F.R.S. 11. Pancreatic Diastase and its Zymogen, by H. M. Vernon, M.D. Oxon. 12. The Differences of Action of Various Diastases, by the same author. Dr. Vernon is led to conclude that malt diastase is an essentially different body from animal diastase; that salivary diastase is different from pancreatic; and that probably the pancreatic diastases of various animals are different bodies. 13. On the Digestion of Cane Sugar, by J. H. Widdicombe, M.A. 14. The Proceedings of the Physiological Society, which include an article by E. H. Embley on the Causation of Sudden Death during the Administration of Chloroform; another by E. I. Spriggs, M.D., M.R.C.P. Lond., on a New Method of Observing Peptic Activity; and a third by Thomas Lewis on the Structure and Functions of the Hæmolymph Organs.

The *Veterinary Journal* for March commences with an editorial criticism upon that much-talked-of section of the War Office, the Remount Department. Although letting the authorities down lightly and recognising the difficulties which had to be faced, the article seems to infer that there has been a lack of business capacity shown throughout the

whole affair and mentions certain salient points which must always be taken into account when estimating the actual cost of a troop-horse—such a point, for example, as transport and its necessary accompaniments in regard to forage, and the like. There is also a complaint regarding the cost of working the Indian Remount Department, as, upon the authority of the *Times*, each troop-horse passed into the ranks costs on an average £200. An inspection of the remount farms has been recently made by a distinguished body of army officers and as a result there is a suggestion that an Imperial Stud Department shall be formed to absorb the Remount and Civil Veterinary Departments and thus to bring them under one head. Clinical articles are given on Sarcoptic Mange of the Ox and Demodactic Mange of the Dog and there is an interesting illustrated case of an Actinomycotic Tumour removed from a Cow's Mouth. The remainder of the pages are devoted to extracts from foreign journals, reviews of books, and papers read before various veterinary medical societies during the previous month.

The *Veterinarian* for March has a dearth of clinical articles which seems to show either a very great apathy amongst the members of the veterinary profession or else that the usual recrudesence of disease which comes in the spring has made practitioners so busy that they cannot find time to put their pens to paper. The journal commences with a lengthy extract from a recently published work on Surgery, and is followed by others on Liver Fluke, the Development of Knowledge Concerning Animal Diseases, and Live Stock in Russia. These are followed in turn by a few extracts from foreign journals, some remarks on Current Topics, and Science Notes. The dearth of original matter is a subject for regret.

New Inventions.

SET OF TROCARS AND CANNULÆ FOR EMPYEMA.

MESSRS. ARNOLD AND SONS, London, have made for me a set of special trocars and cannulæ for use in certain cases of empyema. They are flattened from side to side and not circular as usual in other trocars, to enable them to pass through an intercostal space with greater ease. The cannulæ

are made of silver and they can be left *in situ* for 10 days if necessary. The trocars are of very hard steel and in consequence of their shape the end and the cutting edge project further than in the ordinary form. To minimise the danger to deep parts when the instrument is used each cannula is fitted with a moveable shield, being fixed at any depth by a screw as in Durham's tracheotomy tube. The shape of the shield is similar to that of a bivalve tracheotomy tube, but it is perforated by two long slots placed in such a manner that whatever be the inclination of the ribs the tube can be kept in position by tapes threaded through these slots and passed straight round the chest. The set consists of three, with one handle which screws into all the trocars. The sizes are as follows: 1. Small, $\frac{1}{16}$ inch × $\frac{1}{8}$ inch and $1\frac{9}{16}$ inches long. 2. Medium, $\frac{7}{16}$ inch × $\frac{7}{16}$ inch and $1\frac{9}{16}$ inches long. 3. Large, $\frac{5}{8}$ inch × $\frac{1}{4}$ inch and $1\frac{9}{16}$ inches long. The above are inside measurements; the length is the effective length—viz., from the shield to the end of the cannula. The chief use which I have put this instrument to, and in which I have found it to act extremely well, is to drain an empyema after incision of the skin under eucaine administered hypodermically in those cases where the administration of a general anæsthetic is especially dangerous on account of the condition of the patient.

WILLIAM TURNER, M.S. Lond., F.R.C.S. Eng.,
Senior Assistant Surgeon, Westminster Hospital; Surgeon, Royal Hospital for Diseases of the Chest, City-road, E.C.

Looking Back.

FROM

THE LANCET, *SATURDAY, APRIL* 10, 1824.

LECTURE 49.[1]

Thursday Evening, April 1.

On the Different Amputations.

Operations are now much less frequently performed than they were in the days of our ancestors, owing to the great improvements which have taken place in surgical science. Many of the diseases which were formerly considered incurable can now be easily cured by modes of treatment corresponding with our increased pathological knowledge. Many accidents, for example, where the parts are much lacerated, and for which the ancients would have operated, we leave to nature, by whose influence the different reparative processes will be set in action and the injured limb restored to health and utility. When amputation is necessary, nature will occasionally even perform this operation unassisted by art; in mortification of the feet it often happens that the leg will be amputated by nature as effectually as though it had been accomplished by the amputating knife. At Guy's Hospital there is at the present moment a case of this description. You have seen, in the case which I allude to, first, a division of the skin, then the division of the muscles shorter than the skin, and lastly, the division of the bones; the fibula has already separated, and the exfoliation of the tibia is rapidly going on. Nature in this case if left to herself, would, without doubt, accomplish the amputation of the leg, but the safety of the man requires, I think, that the remainder of the bone should be divided by the saw, for if this be not done, the long continued excitement may wear out the powers of the constitution.

Diseased joints used very frequently to lead to the performance of amputation, in the young as well as in old age; but amputation is much less frequently performed at the present day, in consequence of such disease, than some years back; even diseases of the joints of the upper extremities of children give rise to amputation much less frequently than in the days of our forefathers, but in chronic diseases of the ankle and knee, amputation is still very commonly performed; there is, however, a marked distinction in these chronic enlargements; one variety may be called congenital, which exists from the birth of the child, and the other is from some debilitating cause which produces the complaint after birth; as the constitution therefore was radically weak or vitiated in the former of these affections, you cannot expect that such permanent benefit will result in that case, as in the latter, where the constitution became affected from some accidental circumstance.

With respect to diseases of the ankle and knee joints, amputation for such complaints will occasionally be necessary both of the leg and thigh; indeed chronic affections of the ankle and knee give rise to amputation as frequently as diseases in any parts of the body. For compound fractures we seldom amputate directly: they are seldom so severe as to require immediate amputation, and it is not until gangrene or disease of the bone has taken place, that it is deemed necessary to amputate; compound fractures, however, from the superior manner in which they are now treated, do much better than formerly, and very severe injuries of this description will often terminate most favourably, therefore upon the whole, amputations are much less frequently performed at the present epoch than in the days of our ancestors.

[1] Excerpt from report of lecture delivered by Sir Astley Cooper in the theatre of St. Thomas's Hospital.

THE LANCET.

LONDON: SATURDAY, APRIL 12, 1902.

The Will of Mr. Rhodes.

THE will of CECIL RHODES is a monument of the man, exemplifying in itself the vastness of his ideas, the loftiness of his ambitions, and the minute attention to detail with which he was accustomed to organise his designs. His intention to assist the welding of the British Empire into a more powerful and harmonious whole by promoting educational inter-communication between the mother country and the colonies is assured of success; while the recognition of the many aims and interests that Great Britain and Germany have in common is to our thinking as shrewd as it is generous. The medical profession will have learned with gratification that this prescient man saw the influence that is played in the development of peoples by medical science. His recognition of the claims of medical science upon his magnificently-planned munificence shows a sense of the part played by medicine in the civilising of the world; it proves also an appreciation of the fact that in spite of all recent progress and discovery science has still wide realms to explore, in the investigation of which money is necessary to equip the explorer. Mr. RHODES'S reference to the features of medical education at Edinburgh and Oxford is peculiarly interesting. Throughout the portion of his will which deals with university education he never loses sight of the social aspects of Oxford life as he knew it. He is aware of the high reputation of the University of Edinburgh which, he estimates, has at least 50 young men from Africa among its students, many of them attracted by its medical school. He is aware of the excellence of that medical school, but at the same time he sets high value on the residential system of which he himself has had personal experience at Oxford. For this reason he establishes the scholarships which he desires to found with a view to their recipients being educated at the University of Oxford. The terms and conditions of these scholarships are now known to everyone and we need not describe them. It has been suggested that in certain matters of detail they do not comply with what is required in the case of scholarships at Oxford. Presumably, if any difficulties in these respects arise with regard to the appointment of students such difficulties in the case of gifts of so great importance will easily be got over. It also may be held that the scholarships designed by Mr. RHODES are not, strictly speaking, university scholarships at all, but, rather, scholarships to be awarded by the trustees of Mr. RHODES'S will, without any intervention or control by the university authorities, to members of particular colonies and States.

With regard, however, to the relative educational facilities for medical students at Oxford and at Edinburgh Mr. RHODES makes a suggestion the meaning of which is obvious though the testator had not the facts of medical education very clearly before him. He suggests that Oxford should "try and extend its scope so as if possible to make its medical school at least as good as that at the University of Edinburgh." Mr. RHODES in his will shows intimate and modern knowledge of the conditions existing at his college and his university. When the will was made he no doubt knew that there had been progress and improvement initiated in the matter of medical education at Oxford, so that the early training of the Oxford medical student in the purely scientific, or auxiliary, branches of his profession is thoroughly first class. He also knew that as a centre of medical education Edinburgh deservedly enjoys a long-established and world-wide fame. When, however, he recommends the University of Oxford to extend its scope, and implies that it has, or could obtain, the power to make its medical school "at least as good" as that of Edinburgh, he would appear to have overlooked the circumstances which contribute to make medical education at Edinburgh University what it is, circumstances which are quite unattainable at Oxford whatever efforts the University of Oxford may be stimulated to make. Edinburgh as the capital city of Scotland, and one of its largest centres of population, is a medical centre, in the natural course of affairs, such as Oxford can never become. Edinburgh in its world-famous Royal Infirmary combines in one institution to a singular degree all that is necessary for the most complete course of clinical study. The University of Oxford can do what lies in its power as a university for the education of its medical students, but it cannot possibly increase the Radcliffe Infirmary so as to make it a hospital comparable with the Royal Infirmary of Edinburgh. Nor can the reputation for scientific teaching which is necessary to attract students of science from all parts of the world be built up in a day. Edinburgh was a centre of scientific inquiry and teaching when Oxford and Cambridge were schools of academic learning that practically confined their attention to Latin, Greek, mathematics, theology, and to questions arising out of these studies. Cambridge has made a name for itself during the past 20 years as the school *par excellence* for the student of natural philosophy, and there is no reason why the University of Oxford should not expand in a similar direction and with similar success. But neither of the old universities can become a centre of medical knowledge; both, in the absence of large and varied clinical material, must be content with supplying exceptionally well-grounded students to other medical schools and with rigorously examining these same students in the later stages of their careers. That this point was hardly clear to Mr. RHODES we think must be allowed.

We warmly congratulate the University of Oxford on all the benefits which it will receive from the enthusiasm and far-sightedness of its great *alumnus*.

Mosquitoes and Yellow Fever in Havana.

GRADUALLY but, it would seem, surely our knowledge as to the zoological distribution of infectious disease is extending and with its extension the field whereon is fought

the battle against diseases affecting the human species is shifted from man himself to what is called the intermediary host. It has been so with malaria, it has been so in a measure with plague, and it is so with the several parasitic diseases which will at once suggest themselves. Of diseases such as these man has no longer the sole prerogative, they can no longer be known exclusively as "human diseases." Scientific research has now, in a sense, transferred from man to the mosquito that veritable scourge of certain tropical areas, yellow fever. The brilliant and withal somewhat heroic experimental investigations of our American *confrères* have served to show almost conclusively that personal infection plays an altogether insignificant, if any, rôle in the spread of the disease—that, as with malaria so with yellow fever, it may be a case of "no infected mosquitoes no disease." Many of the researches as to the part played by mosquitoes in diseases common to man have been worked out in one or another portion of the British Empire which has, epidemiologically speaking, the fortune to possess within its limits all the diseases which mankind is liable to inherit or to acquire; but unfortunately for scientific patriotism the workers in the field have often owed allegiance to other sovereigns than our own. In the matter of yellow fever the workers have been American, as also has been the soil upon which the researches have been carried out and the conclusions applied.

As we pointed out in a leading article on June 15th, 1901, the investigations of Major WALTER REED and his colleagues have seemed to show that the prevention of yellow fever is largely bound up with the destruction of the *Culex fasciatus* or the prevention of its bites, and the military administration of Havana has lost no time in putting this theory to a practical trial. The result of the destruction of this mosquito and its potential progeny has been almost dramatic in its thoroughness, and the city of Havana is now pronounced to be practically free from yellow fever. Thus it comes about that the advent of the American administration at the close of the Cuban war has, according to the last annual report of Major W. C. GORGAS, surgeon, United States Army, and chief sanitary officer of the city, been speedily followed by the extirpation of a disease which has been endemic therein for the last 200 years. We are in entire accord with Major GORGAS that this is a matter of vast importance and that "this fact should be made known to the world as rapidly as possible." If the passage of time sets its seal upon the promise of 1901–1902 we are, as Major GORGAS observes, face to face with a prophylactic measure which is worthy to rank, at least in so far as the yellow fever areas are concerned, with the discovery of JENNER. We cordially trust that time may justify the prophecy which has been made in all good faith and upon apparently trustworthy grounds. But while provisionally accepting the remarkable figures placed before us we must be forgiven if we plead for time before finally acquiescing in the inferences which have been drawn from them. On looking at the table relating to the annual deaths from yellow fever in Havana for the last 45 years we note that the yearly toll ranged from 2058 to 51, this latter figure being exceptional in that there has been nothing within recent years under 103, the figure for 1899. Under the anti-mosquito *régime* for the first 10 months of the yellow fever year 1901–1902 there have been but *five* deaths and this unprecedented drop is certainly such as to suggest the operation of some quite new factor. Unfortunately Major GORGAS does not give us in the text of his reports many details as regards the method of attack adopted, but we gather that during the period under discussion Havana was a city full of "non-immunes" and that it was in unrestricted communication by rail with half a dozen infected towns. Commerce was not interfered with and no restraints were placed upon the admission into Havana of clothing and bedding from infected localities. As Major GORGAS tersely expresses it: "The only infected material from the towns looked after was the sick man, who was carefully sought out and screened from mosquitoes." This story is full of interest both for the epidemiologist and the administrator, and the English Government will be lacking in initiative if it fails to make detailed inquiries at once into all the circumstances so that, if the facts justify the imitation, the method adopted in Havana may be applied to the yellow fever areas of our Empire. From the tables in the report before us it appears that there have been very extensive operations in the direction of the application of petroleum, in intimating to householders the existence of larvæ on their premises, and in making cisterns mosquito-proof, but precise details are lacking.

As a matter of curiosity we have been led to examine the figures as to the prevalence of yellow fever in Vera Cruz from 1866 to 1900, and from these we find that the annual figures have ranged from 747 to *nil*, the totals on several occasions having been below 10. We quite accept the obvious criticism that the returns for Vera Cruz and Havana are not strictly comparable, but nevertheless the figures show that in large populations where yellow fever is endemic it is not unusual for the returns for any one year to present an absence of the disease in question. In thus enjoining caution we are anxious to accord all honour to the American military administration in Havana the results of which are so graphically portrayed by Major GORGAS himself when he tells us that "the army took charge of the health department of Havana when deaths were occurring at the rate of 21,252 per year. It gives it up with deaths occurring at the rate of 5720 per year. It took charge with small-pox endemic for years. It gives it up with not a single case having occurred in the city for over 18 months. It took charge with yellow fever endemic for two centuries—the relentless foe of every foreigner who came within Havana's borders, which he could not escape and from whose attack he well knew every fourth man must die. ..... The army has stamped out this disease in its greatest stronghold." We cordially trust that this most pleasing picture is painted in permanent colours. But the Old World statistician seems to hanker after more information as to the rates referred to and as to whether the late war in Cuba may have had any part in accentuating the statistical contrasts.

The Grocer's Licence.

ON Monday last the Home Secretary successfully moved the second reading of the Licensing Bill which was thereupon referred to the Standing Committee on Trade. We beg

to congratulate him upon the progress which has been made with this measure. The Licensing Bill may not be a comprehensive or drastic piece of temperance legislation—indeed, Mr. RITCHIE has himself disclaimed for his Bill any such thorough-going character—but it is an honest attempt to minimise the evils of drinking, and as such deserves the support of all thinking men and women, and especially of the medical profession. How widespread and how complicated the evils of excessive drinking are is better known to medical practitioners than to any class of society. The physical ills that are wrought by intemperance form the daily lessons of our hospitals; the moral effects of the same baneful habit are seen at their fullest growth in our lunatic asylums and prisons. It is consequently incumbent upon the medical profession to speak on the absolute necessity of the proper regulation of the drink traffic, although they are not called upon to vouch for all the sensational propaganda made in the teetotal interest.

During the debate on the second reading the measure received from Mr. CAINE, speaking as a representative of the temperance party of the country, a qualified blessing, but several members, notably Mr. HARWOOD, Mr. TRITTON, and Major JAMESON, spoke in condemnatory terms of some of the clauses. Criticism of the measure centred largely around Clause 8, that which deals with grocers' licences. The present position of grocers' licences is that any person can obtain a licence of this kind as a matter of course, if he fulfils certain obvious conditions. Any tradesman against whom nothing serious can be alleged can claim from the magistrates a certificate empowering him or her to purchase a licence at the Inland Revenue Office. The local justices are not empowered or permitted to entertain the question of expediency—that is, whether their district stands in need of further facilities for procuring drink. By the new Bill the granting of these licences is placed at the free and unqualified discretion of the magistrates; no sort of claim can be made by anyone to the privilege. Mr. HARWOOD, who opened the debate, objected strongly to this alteration of the law, arguing that licences when so granted would confer upon the licensees a vested interest which would add to the difficulty of compensation—a difficulty which, as all who have studied the temperance question know, still looms ahead. Major JAMESON, who believed the Bill to be "as silly as it was unnecessary," also objected to Clause 8 which he considered to place the off-licence holder in a most unfair position and the effect of which he did not consider the Home Secretary to have realised. We expect that Mr. RITCHIE knows the ins and outs of the matter as thoroughly as does Major JAMESON. It is obvious that the new regulation may work unequally. In districts where the licensed victuallers' influence is great fewer licences will be granted to grocers, but we do not fear that grocers as a class will meet with injustice any more than we fear that a local feeling against that much-abused citizen, the publican, will anywhere lead to an attempt to satisfy the drinking requirements of the community by granting licences to grocers in profusion. Mr. CRIPPS, speaking also on behalf of the off-licence holder, believed that it was quite untrue to say that grocers' licences had led to the increase of intemperance. A large section of the public appear to share Mr. CRIPPS's view that the conditions under which liquors are sold by off-licensees are such as conduce to sobriety, while the existence of a number of businesses which have been legitimately built up under grocers' licences and about which no complaints have been made, is an argument against the abolition of the existing system which has to be reckoned with. Why, Mr. CRIPPS asked, should the business of any of these grocers be placed at the mercy of a bench of magistrates? The only reply is that the good of the public calls for the reform even though individual cases of hardship may occur, while it is our opinion that such cases will be so infrequent as not to be worth counting.

The matter is one upon which the medical profession has a right to speak somewhat strongly. We believe that we certainly endorse the views of the majority of our profession, who have given the question a thought, when we say that the proposed modification of the manner in which grocers' licences for the sale of liquor are to be obtained is advantageous to the public health and the public morality. The abolition of grocers' licences has been much threatened. A quarter of a century ago we obtained in this office 900 signatures of medical men to a petition for this reform, and our movement started the feeling against off-licences which has remained in force ever since. At that time we stated that, as far as we could see, the grocers' licences were distinctly things that were liable to abuse. By what plea of necessity the issue of unrestricted grocers' licences could possibly be excused we were then unable to discover, and we have not been able to discover since. No valid reason can be urged on the ground of general utility why the grocer should add to his proper functions a duty which makes of him virtually a disguised publican. In some country districts, it may be, the provision store must serve to some extent the purposes of a house of call, but there is no absolute necessity even here for the off-licence, while the discretion vested in the magistrates will meet individual cases. We have no manner of doubt that the tendency of grocers' licences is to encourage secret drinking. The evil influence of successive little stimulating "nips," taken when the drinker is not under observation, is well known to be nearly or quite as hurtful to the health as are the unbridled but more occasional excesses of the open drunkard. But the secret toper, who would resent the imputation of drunkenness, will avoid a professed drinking bar. The grocer's licence is for such men and women—and especially for such women—a special snare. We understand, of course, that the law cannot restrain an ostensibly sober person from procuring drink if he or she chooses, but it is nevertheless quite within the province of the legislature to restrict the opportunities of those predisposed to ruinous indulgence, especially when its action can in no way interfere with public convenience. On this principle the change proposed by the new Bill is entirely justified. We anticipate beneficial results from its operation—not so much, perhaps, in the case of the chronic inebriate as in that of many women to whom the off-licence affords a tempting facility of descent. There appears to be no reason why the holders of grocers' licences should not

receive compensation in some form if their present privilege is withdrawn. Into this part of the question, however, it is not necessary for us to enter. We may safely entrust its settlement to the consideration of the Government.

Annotations.

"Ne quid nimis."

THE GERMS OF THE SEA.

AT no particular spot has the sea been found to be free from organisms, although those isolated and recognised have proved to be harmless, consisting of actively motile rods and vibrios, cocci being less numerous. As might be expected, the number of organisms increases immensely as the shore is approached. Thus about a mile from the shore something like 4000 germs per cubic centimetre have been found, and this influence of the shore extends for four or five miles. Some hundreds of miles from land the number diminishes to 600 and at greater distances to 200 or less. Of course, the fact that algal vegetation is richest near the shore, providing a highly nourishing hunting ground for the marine organism, accounts for the myriads usually found there. Samples of sea water taken at some depth below the surface proved to contain only a few bacteria per cubic centimetre. Thus at half a mile below the surface only from eight to 12 bacteria were present. There is little doubt that even should pathogenic organisms gain access to the sea, as must be the case when sewers discharge raw sewage into it, their activity must sooner or later be destroyed. The sea is remarkable from a bacteriological point of view in containing phosphorescent bacteria and it is probable that some of these are disease-producing so far, at any rate, as regards certain aquatic animals. Thus a bacterium has been successfully cultivated from the body of the luminous talitrus which is both pathogenic and luminous. This bacterium invades the abdominal cavity of this aquatic animal and all its organs with a fatal issue. During the presence of the disease the victim shines with a green light which is said to be visible nearly a dozen yards away and which persists for some hours after the demise of the animal. It is not improbable that the luminosity of other marine animals may be due to the invasion of this light- and disease-producing organism. The very beautiful phenomenon of the phosphorescence of the sea is caused by photo-bacteria in part as well as by a variety of low forms of animal life. The eerie light is in no way connected with the element phosphorus as is very commonly supposed. The cause of the phenomenon is respiratory exchange or oxidation, an aerobic function. Sea phosphorescence is never witnessed in perfectly smooth water, while the brilliancy of the light when it is observed is always greatest upon the crests of the waves or where the water is in a violent state of agitation, as in the wake of a steamer. Its occurrence, therefore, is evidence of active oxidation. Could, again, the sea be sterilised phosphorescence would cease. The presence of highly combustible matter increases the light. A very simple experiment proves this. If the flesh of a fresh haddock or herring be placed in a 3 per cent. salt solution and kept at a low temperature (from 40° to 50° F.) the liquid will rapidly develop phosphorescence which becomes quite brilliant on adding a little glycerine or sugar, or what, in other words, is respirable material. It is curious that in marine life disease and death should be associated with luminous phenomena.

EFFECTS OF STRYCHNINE ON RABBITS IN WHICH DOUBLE NEPHRECTOMY HAS BEEN PERFORMED.

IT has been well established that strychnine is eliminated from the body mainly through the kidneys. Dragendorff has shown that all the strychnine leaves the body unchanged and Kratter succeeded even with such a small medicinal dose as two milligrammes in recovering the entire quantity from the urine. If the subcutaneous administration be accomplished very slowly even more than a fatal dose may be injected without causing any characteristic effect, which has been explained on the assumption that in such a case enough strychnine is eliminated by the kidneys to prevent the accumulation in the blood of an effective dose. It has been presupposed as a matter that is self-evident that in an animal from which the kidneys have been removed subminimum doses will even aggregate within the blood to a poisonous dose simply because the eliminating organ is removed. This supposition has been proved not to be correct by Dr. S. J. Meltzer and Dr. W. Salant, who publish the result of their researches in the *Journal of Experimental Medicine*, vol. vi., No. 2. The title of their communication is "The Effects of Subminimum Doses of Strychnine in Nephrectomised Rabbits." Their investigations bring out the following points. 1. For a rabbit without its chief eliminating organs—the kidneys—the minimum toxic and fatal doses of strychnine are, nevertheless, not smaller than are those for the normal animals. 2. Even in a rabbit without its kidneys a single cumulative toxic dose of strychnine induces only one attack, or a few attacks, of the characteristic spasm and the animal soon recovers and shows no further effects of the strychnine. Hence a toxic dose apparently remains within the body, causing a continual effect. 3. If proper subminimum doses at proper intervals are employed "nephrectomised" rabbits can gradually receive thrice the fatal dose of strychnine without showing any reaction. Large fatal doses of the poison are apparently accumulated within the body without causing any effect. Dr. Meltzer and Dr. Salant then proceed to suggest various explanations of these facts, but, as they admit, these are only hypotheses which require further study. We consider the most plausible suggestion to be that after the removal of the kidneys the act of elimination is carried on by other organs; for instance, by the gastro-intestinal canal. The above observations are interesting from several points of view but the most practical result is the following consideration. It has been claimed by clinicians that in chronic diseases of the kidneys certain drugs, such as strychnine, should not be administered since, owing to the lessened power of elimination on the part of the kidneys, serious or even fatal accumulative results might follow. According to the experiments which we have been considering, however, such a theory is incorrect and the animal body apparently possesses a mechanism capable of regulating the cumulative capacities of the blood even in the absence of the kidneys. It would be interesting to know the results of similar investigations with other drugs, such as morphine, for the fear of cumulative effect in renal disease would seem to rest at present on theoretical grounds alone.

ON THE RELATIVE PREVALENCE OF DISSEMINATED SCLEROSIS.

AN important discussion on the relative prevalence of disseminated sclerosis in the United States based upon very extensive and exact records collected by leading neurologists is published in the *Medical News* of New York of March 22nd last. In opening the discussion Professor C. L. Dana reported that he had collected the histories of 3000 private patients suffering from various forms of nervous disorders and that

10 of these were instances of disseminated sclerosis. Of 600 outdoor patients seen by him at his clinic at Bellevue Hospital during the past year two were probably (though not certainly) afflicted with disseminated sclerosis. "In Bellevue Hospital itself 12,000 patients were received annually and one of his assistants was continually on the watch for cases of nervous diseases, yet he had not found more than one or two cases of multiple sclerosis each year." From his experience he was compelled to believe that the disease was rarer in the United States than in Europe, "possibly owing to the better surroundings of the masses of the people." Dr. Graeme Hammond from a careful examination of his case-books for the past 10 years found that among 3000 private patients suffering from nervous diseases 15, or 2 per cent. of the total, had disseminated sclerosis, while out of 7000 patients at his clinic 32, or 1·33 per cent., had the same affection. Thus out of 10,000 private and hospital cases 47 had disseminated sclerosis, a proportion of 1·5 per cent. Dr. Allen Starr's records of 10,056 cases at his clinic showed that 27 had disseminated sclerosis, but in six of the latter diagnosis was recorded as doubtful. All the female patients with disseminated sclerosis were below the age of 31 years, the youngest being 16 months old. Dr. Sachs stated that out of 2000 patients in his private practice 13 were undoubtedly cases of disseminated sclerosis, or 1 in 150. There were some cases observed by him which had begun as disseminated sclerosis and had in later life passed into paralysis agitans. Dr. B. Onuf said that during his observations made in hospital of nearly 600 cases of nervous diseases he had noted eight cases of disseminated sclerosis. Dr. Edward D. Fisher had during six years observed 2451 cases of nervous disorders and of these eight were examples of disseminated sclerosis. Dr. Joseph Collins had in 1895 under his care 1270 patients with nervous diseases with three of disseminated sclerosis; in 1899 the figures were 1400 and five of disseminated sclerosis; in 1900 they were 1368 patients and five of disseminated sclerosis; and in 1900 they were 1470 with five examples of disseminated sclerosis. Thus, of a total of 5508 patients suffering from various nervous disorders 18 had disseminated sclerosis. Thus of a total of 33,607 patients with various nervous disorders collected from the records of Professor Dana, Dr. Graeme Hammond, Dr. Allen Starr, Dr. Sachs, Dr. Edward Fisher, and Dr. Joseph Collins, 125 were examples of disseminated sclerosis, or 0·37 per cent., thus showing that the disease was comparatively rare in the United States. According to the testimony of many of the contributors to the above symposium it appeared that disseminated sclerosis was much rarer than tabes dorsalis in the United States and slightly less frequent than paralysis agitans.

BACTERIOLOGY AND SEWER AIR: ITS PURIFICATION.

IN an interesting note upon this subject just published in pamphlet form Dr. J. T. C. Nash, the medical officer of health of Southend-on-Sea, points out that sewer air is detrimental to health and repulsive to the sense of smell chiefly because of (1) offensive gases and (2) organic particulate matter. The offensive and prejudicial gases include sulphuretted hydrogen, sulphuretted ammonia, carburetted hydrogen, and carbon dioxide. The particulate organic matter comprises such bacteria, moulds, or yeast as may happen to be present. Various investigators have shown that different samples of sewer air vary greatly in their numerical bacterial contents. The bacterial flora of sewer air are not constant in kind, the number and variety of bacteria present depending on seasonal conditions and the special environment of the sewer. It appears to be established, however, that the proportion of moulds to bacteria is greater in sewer air than in the air of the street or even of an ordinary room. Dr. Nash agrees that it is of the greatest importance that sewers and drains should be so arranged as to minimise the possibility of contamination by splashing, and he regards it as equally important that strong currents of air should be avoided or that, when that condition exists, the air issuing from a sewer should be washed before it is allowed to escape through a ventilating shaft into the street. The importance of thus arresting particulate matter is obvious from the fact that in proportion as the draughts or currents of air in a sewer are stronger or feebler the number of organisms in the sewer air will be greater or less. Sewage organisms find their way into sewer air (1) by splashing; (2) by the bursting of bubbles from putrefactive changes; and (3) by motility and the agency of moulds. Dr. Nash maintains that all that is required to secure the innocuousness of sewer air is to submit it to a thorough washing with fresh water before it is permitted to mix with the street air *viâ* the ventilating shaft. Bacteriologically the results of this simple process are satisfactory, but it would be interesting to determine whether, in spite of this fact, washed sewer air has any poisonous effect on the organism.

FACTORY GIRLS' COUNTRY HOLIDAY FUND.

WE are glad to see by the annual report of this excellent fund that both the work done by, and the resources placed at the disposal of, the fund have shown a considerable increase. The work was commenced 14 years ago, when only 39 women and girls were sent away for country holidays during the year. In 1900 2680 were sent. Last year, however, the number rose to 3060 up to the middle of September, by which time the regular annual holiday exodus was over, but convalescent cases continued to be sent away until the end of the year. Of this number 250 had medical certificates and stayed away for periods of three, four, or in some cases even five weeks. The total number of those who have been assisted by the fund during the year amounts to 3120. There is no need to dwell upon the immense good which this fund does towards improving the health of a class whose occupation is not of the healthiest and whose social position does not enable them to live in healthy environments, but we would point out that it is not only the workers themselves who benefit by an annual holiday but the community at large, for many of these girls are engaged in the preparation of food, and it is eminently desirable that the work-people engaged in this kind of labour should not suffer from ill-health. Few, if any, funds are deserving of more support. The address of the honorary treasurer is St. Peter's Rectory, Saffron-hill.

SEVERE HÆMATURIA FROM MOVEABLE KIDNEY.

SLIGHT hæmaturia may occur in cases of moveable kidney, but such hæmaturia as was present in the following case, which is recorded in the *Boston Medical and Surgical Journal* of March 6th by Dr. A. J. Cabot, is exceedingly rare. A woman, aged 43 years, was seen on April 6th, 1901. For the past few years she noticed, when tired, a dull pain in the abdomen and on several occasions observed a little blood in the urine. In December, 1900, the urine was deeply coloured with blood. In March, 1901, the urine was almost black and contained clots. She was put to bed and ergot and other hæmostatics were administered, but the hæmorrhage did not abate. On examination in April the urine was of specific gravity 1012 and alkaline; it contained between ¼ and ½ per cent. of a large deposit of blood, mucus, and pus. Discomfort was experienced only during the passage of clots. On April 8th the patient was propped up in bed in a half-sitting posture. She was extremely pale and waxy in appearance, with a rapid feeble pulse. The bladder was carefully examined with a sound and its posterior and lateral walls were palpated

through the vagina with negative result. The right kidney was enlarged and low in the abdomen, the lower end being just above the brim of the pelvis. It could not be pushed up by moderate force and the use of more was not considered advisable. The patient's posture was thought to favour downward displacement of the kidney and to aggravate the congestion. Her extremely low condition was against operation. She was therefore laid flat in bed and the foot of the bed was raised. For 36 hours the hæmaturia seemed greater than before. But after 48 hours it diminished and a few hours later the urine was free from red colour. Three days later the foot of the bed was lowered to the floor for about four hours. Next morning hæmaturia appeared. From this time the foot of the bed was kept elevated until early in May, when the patient became tired of the position and was allowed to sit bolstered up in bed for 20 minutes daily. Hæmaturia, though far less than before, was at once noticed. From this time the hæmaturia ceased and strength was rapidly gained. On May 20th nephrorrhaphy was performed. The kidney was much smaller than at the time of the former examination—little if at all larger than normal. It could be pushed easily into its normal position. Convalescence was uneventful. In February, 1902, hæmaturia had not occurred since the operation and the patient complained only of dragging pain in the right kidney when she lay on her left side.

INFECTIOUS DISEASE IN EGYPT.

DR. ENGEL BEY, the director of statistics in the Sanitary Administration of Egypt, has published a statement in tabular form showing the incidence, with differentiation between natives of the country and Europeans, of small-pox and the so-called "typhic fevers" in Egypt during the quinquennium 1896–1900. In the following table some of Dr. Engel's most striking results have been collated:—

1896–1900.	Small-pox.		"Typhic fevers."	
	Europeans.	Natives.	Europeans.	Natives.
Deaths.				
13 Provinces	16	2326	21	2665
24 Towns (included in the above)	15	363	21	1382
5 "Gouvernorats"* ...	224	700	483	3182
Frontier Province... ...	—	360	—	—
General total...	240	3446	504	5847
Ambulances (Government).				
Admitted...	—	11581	—	8720
Died	—	2616	—	1952

* Cairo, Alexandria, Damietta, Rosetta, Port Said, Suez, Ismailia, and El Arish.

Dr. Engel's tables have been prepared with great attention to detail and afford data from which future sanitary historians will doubtless be able to extract valuable information, but it is evident that the machinery at the disposal of the Egyptian sanitary authorities does not as yet enable them to supply vital statistics referring to the great mass of the population. It is only in the large towns that the diagnosis of fatal diseases can be at all depended on and until medical practitioners of repute become far more abundant than they are at present there is but little hope of any improvement in this respect. Practically the Egyptian *fellahin* are still destitute of skilled medical aid. They enter and leave the world without any trustworthy helper to smooth the too often rugged path and fill up dangerous pitfalls. It is true that some years ago an attempt was made to introduce self-supporting dispensaries, but although the original establishments still exist they have not increased as it was hoped that they would. For many years to come—until the leaven of education has had time to work—the Egyptian cultivator will continue to trust his familiar soothsayer the barber rather than the exponent of western medicine.

HÆMORRHAGIC SMALL-POX.

AT a meeting of the Metropolitan Asylums Board on April 5th a letter was read from the Local Government Board stating that they had requested Dr. E. Klein to undertake an inquiry by bacteriological methods as to "hæmorrhagic small-pox" and asking that all necessary assistance might be afforded him in his investigation.

A PUBLIC BACTERIOLOGIST AND PATHOLOGIST FOR NOTTINGHAM.

FROM a copy of the minutes of a monthly special meeting of the Council of the City of Nottingham held on March 3rd we note that a bacteriologist and pathologist to the corporation has been appointed at a salary of £100 per annum, Dr. F. H. Jacob receiving the post. In view of the demand which in the future municipal bodies will be certain to make upon the energy, time, and skill of an official bacteriologist it is to be hoped that the remuneration will be commensurate with the services required of him. It cannot be expected that the ruling bodies of our cities and big towns should be able effectually to administer sanitary affairs without the aid of a bacteriologist and pathologist and certainly the time is at hand when all larg corporations and boroughs should retain the services of an officer specially qualified in these highly-important branches of State medicine.

RECURRENT HERPES ZOSTER.

A SUPPOSED characteristic of herpes zoster is that it does not recur—that one attack confers immunity. This constitutes a distinction between true zona and other forms of herpes which frequently recur. However, a number of cases of recurrent herpes zoster have been recorded. M. Matignon has described the case of a young soldier who from childhood was subject to attacks of zona of the ophthalmic nerve, which followed one another almost without interruption three or four times a year.[1] Each attack was ushered in by fever and the general phenomena of true zona. More recently Dr. J. Grindon[2] has collected 61 cases of recurring zona. Some cases have also been reported in the *British Journal of Dermatology*. Mr. G. Pernet recorded the case of a woman who had, in December, 1891, right intercostal zona, and in December, 1892. February, 1896, and November, 1896, a group of papules, which passed into vesicles, below the right angle of the lower jaw which were preceded by neuralgic pains in the right side of the head.[3] Dr. W. Beatty has described the case of a man, aged 35 years, who had, in July, 1894, pains in the genital region which were followed by vesicles on the scrotum and between some of the toes. The condition recurred in February, 1895, May, 1895, December, 1896, and April, 1897.[4] At the meeting of the Société Médicale des Hôpitaux of Paris on March 7th M. Hirtz and M. Salomon described the following case. A man, aged 67 years, addicted to alcohol, was admitted to hospital in July, 1901, suffering from pains in, and an eruption on, the right buttocks and thighs which he had had for several days. In 1895 he had similar neuralgic pains which were followed by zona. Since then, about January or February every year, the condition had

[1] Bulletins de la Société Médicale des Hôpitaux, February, 1894.
[2] Journal of Cutaneous and Genito-Urinary Diseases, May (p. 191) and June (p. 252), 1895.
[3] British Journal of Dermatology, April, 1897, p. 157.
[4] Ibid., July, 1897, p. 268.

recurred. The present attack was the first that occurred in July. The sciatic and crural nerves were tender. On the right buttock were tender erythematous patches covered with vesicles, which were diagnosed as herpes zoster. Recovery took place in a fortnight. In February, 1902, recurrence again took place. There were five patches on the right buttock and two small ones on the left.

THE MEDICAL REGISTER.

THE Medical Register for 1902 has just appeared and we are glad to see that some of the errors to which we have had to call attention have been removed by revision. The volume contains this year 1647 pages and a new feature is the Foreign List at the end of the book, a list which contains at present one name only. On page 76 is given a table showing the total number of practitioners on the Register on Dec. 31st in each year. For 1900 there were 36,355 and for 1901 36,912. The total number added by registration in 1899 was 1351; in 1900, 1345; and in 1901, 1318. For practical purposes the diminution of names means little, it is so small in comparison with the number of names on the Register. Yet, taken in connexion with our increasing population it may have some significance.

AMPUTATION OF THE THIGH UNDER ANÆSTHESIA PRODUCED BY COCAINISATION OF THE SPINAL CORD.

SOME thousands of operations must have been performed under anæsthesia produced by the subarachnoid injection of cocaine and similar drugs since Bier introduced the method in 1899. In 1900 M. Tuffier of Paris, who has perfected its technique and extended its use, had employed it in over 200 operations without an accident.[1] But it appears to have been adopted in England only by Dr. Arnold W. W. Lea of Manchester who has performed a number of abdominal operations under spinal anæsthesia.[2] The national conservatism is influential even in medicine and in this instance seems to deserve approbation, for the advantages of the new method are not manifest and the chapter of its dangers has yet to be written. Indeed, a number of deaths has already been recorded. In the *Intercolonial Medical Journal of Australasia* Dr. Robert H. Ritchie has recorded a case of amputation of the thigh in which anæsthesia was produced by the new method. A man, aged 78 years, was admitted to hospital suffering from dyspnœa and œdema of the legs. There were a mitral systolic murmur, displacement of the cardiac apex to the left and downwards, and atheromatous arteries. The pulse at times was almost imperceptible. Under digitalis improvement took place and the œdema disappeared. Moist gangrene of the right leg occurred and extended upwards within two inches of the knee. In consequence of the heart disease general anæsthesia was thought to be impossible. Adopting the technique described in THE LANCET[3] a small quantity of a 2 per cent. sterilised solution of eucaine was injected into the skin about a quarter of an inch to the right of the middle line and midway between the third and fourth lumbar spines. A nick was made in the insensitive skin and the needle of a Luer's syringe was pushed upwards, forwards, and inwards, but the spinal canal could not be reached. The whole process was repeated on the left side and the needle was passed into the spinal canal and cerebro-spinal fluid dripped from it. After about 30 minims had escaped 30 minims of distilled water containing one-quarter of a grain of cocaine were slowly injected. The syringe and needle were left in position so that more cocaine could be injected if necessary. The left leg was repeatedly pinched. 20 minutes after the injection the patient still said that he felt a pinch distinctly and he could localise it. The possibility that the skin might, notwithstanding, be analgesic occurred to Dr. Ritchie. He made a small incision in the left calf and the patient on being asked said that he felt nothing. The incision for the anterior flap was made in the right thigh and no pain was felt, though the patient knew that the leg was being touched. The needle was withdrawn from the spinal canal, the puncture was closed with collodion, and the patient was placed on his back with a towel over his face. The operation was completed painlessly. When the femur was being divided he could hear the sawing. The femoral artery and vein were thrombosed and the cut muscles were of a brown colour. About two hours after the operation the patient complained of abdominal pain and became very excited. He had a bad night and when he took even a little water he vomited. In the morning he still complained of pain. The pulse was very irregular and much weaker. He slept all day and on waking at night took nourishment well. The wound healed by first intention. Vomiting is one of the symptoms which may result from spinal injections of cocaine. Dr. Ritchie's case tends to show that by this method anæsthesia only to pain (analgesia) is produced.

[1] THE LANCET, Jan. 12th, 1901, p. 137.
[2] THE LANCET, March 29th, 1902, p. 912.
[3] Loc. cit.

THE DISTRIBUTION OF PLAGUE.

As regards **Egypt**, during the week ending March 30th 22 cases and 10 deaths from plague have occurred throughout all Egypt: 1 case was reported from Abousir; 4 cases were reported from Kom-el-Nour; 13 cases and 8 deaths, 3 of which occurred out of hospital, from Deshneh; 2 cases and 1 death from small villages near Benha; and 2 cases and 1 death from Korachieh. Korachieh is a village in the Santaz Markaz of Gharbieh. From inquiries made on the spot it is evident that the infection was carried there from cases in Tantah, and it appears that the disease broke out first in February among some Bedouins employed in the Domains Estate. Instead of information being given at once to the Sanitary Department of the existence of cases of suspicious disease followed by death among these workpeople, they were dispersed and their huts were destroyed; the consequence has been that these wandering Bedouins have disseminated the disease in several small encampments about Benha. It is difficult to believe that the Domains inspector was not aware of cases of disease and death occurring among his own people, and if he was aware he has incurred, in the opinion of the Director-General of the Sanitary Department, a very grave responsibility in not having at once made the facts known. It was only on the Commissioner of the Domains noticing that certain huts which had existed near the station for several years had been removed and on making inquiries that he was informed of the reason of their removal, when he immediately informed the Sanitary Department.—As regards the **Mauritius** a telegram from the governor received at the Colonial Office on April 4th states that for the week ending April 3rd there had been no cases of plague.

DIPHTHERIA AND ITS TREATMENT AT COLCHESTER.

EARLY last year we published an account of an outbreak of diphtheria which took place at Old Heath, Colchester, and commented on the action of the medical officer of health of the borough, Dr. G. Brown, in refusing to use antitoxin for the patients at the infectious hospital—a method of treatment which he called "bowing the knee to medicinal Baal." Without assuming any right to dictate what is the proper treatment of diphtheria we pointed out that the

[1] THE LANCET, Feb. 9th, 1901, p. 426.

attitude of the medical officer of health towards accepted medical teaching was very unfortunate, and some six months later, during all of which time diphtheria had been present in Colchester, the town council arrived at the same conclusion. For the members resolved unanimously that it was advisable where the antitoxin treatment had not been administered to diphtheria patients before admission to the hospital that it should be administered on admission. A report has now been made by Dr. Louis Cobbett and Dr. G. S. Graham Smith on the measures taken to check the outbreak of diphtheria in Colchester last year and from this report the value of the antitoxin treatment becomes manifest. At a special meeting of the Sanitary Committee of the town council it has been agreed to appoint a medical officer of health and public analyst to the town who shall devote his whole time to the duties of his office.

ON SOME OF THE SYMPTOMS OF CEREBRAL SYPHILIS IN REGARD TO DIAGNOSIS.

DR. WILLIAM LESZYNSKY of New York has stated in the *Medical News* of March 22nd last that the nature of the symptoms in cerebral syphilis was such as to make a practical diagnosis difficult in some cases and has supplied two illustrative instances of the same. The first case was that of a woman, aged 22 years, who denied all history of syphilis. On several occasions prior to her coming under observation she had had transitory paresis of the left arm and leg, severe headaches, vertigo, and a slight febrile temperature. On admission to hospital there were marked ptosis of the left eye and a vertical diplopia of the same eye associated with paresis of the superior rectus muscle. Vision was normal in both eyes. A slight right-sided facial paralysis was also present. In spite of the patient's denial of syphilitic infection the symptoms pointed suspiciously to cerebral syphilis and the results of treatment with mercury and iodides justified the diagnosis. The diplopia and ptosis disappeared under the above treatment. Later she developed ptosis on the right side, the levator palpebræ muscle only being affected. This also responded to anti-syphilitic treatment and disappeared in four weeks. A month later the left eye was again affected and she also suffered from headaches and temporary attacks of inability to speak (aphasia) or to swallow (dysphagia) which improved under anti-syphilitic treatment—20 grains of iodide of potassium three times a day. Dr. Leszynsky considers that the cerebral affection was a syphilitic basal meningitis in the form of patches involving the cranial nerves combined possibly with a slight degree of endarteritis. The second case was that of a man, aged 33 years, who had enjoyed good health up to August, 1899. He then developed numbness and slight local muscular twitchings on the left side of the face. In October there followed dimness of vision and diplopia of the right eye. In December the molar teeth in the right upper jaw "became so loose that they were removed with the fingers." He was the father of six children reputed to be healthy. He admitted having had a chancre many years previously but had no marked secondary symptoms. The pupils were myotic and failed to react to light or to accommodation, but vision and the funduses of the eyes were normal. Mercurial ointment and iodide of potassium were used in treatment and strychnine was also given as a tonic. At the end of two months he was much improved and disappeared from observation. He reappeared in June, 1901, suffering from almost total blindness and advanced primary optic atrophy of both eyes. The pupils were rigid and the oculo-motor nerve was paralysed in all its branches. He was now treated with strychnine without benefit and Dr. Leszynsky stated that this also was his experience with other patients suffering from cerebral syphilis in its later stages. There were no sensory disturbances in this patient and the tendo Achillis reflexes were preserved—in short, tabes dorsalis could be excluded in this case. The original diagnosis of cerebral syphilis was confirmed but owing to the advanced state of the disease there was no prospect of successful treatment.

SMALL-POX IN LONDON.

THE returns of small-pox for the past week show a decrease in the number of cases. On Saturday, April 5th, there were 46 fresh cases notified and removed; on Sunday, the 6th, there were 32 fresh cases; on Monday, the 7th, there were 57 fresh cases; on Tuesday, the 8th, there were 36 fresh cases; and on Wednesday, the 9th, there were 26 fresh cases.

LIVERPOOL SCHOOL OF TROPICAL MEDICINE.

THE Liverpool School of Tropical Medicine having urged His Majesty's Government to assist the expedition which is at present endeavouring to improve the sanitary condition of Freetown, West Africa, has received the following reply from the Colonial Office, dated March 27th, 1902. "I am directed by Mr. Secretary Chamberlain to request you to inform the committee of the Liverpool School of Tropical Medicine with reference to the letter from this office of the 7th December last that the governor of Sierra Leone has now reported on the subject of their suggestion that the Colonial Government should increase the number of the workmen lent by them to the malaria expedition which is now working in Freetown under the superintendence of Dr. Logan Taylor. Sir C. King-Harman states that he is naturally anxious to give every possible assistance to Dr. Logan Taylor in the useful and important operations which he is conducting in Freetown, but after consultation with him and with the principal medical officer he has decided that the best form in which that assistance can be given is for the Government to undertake by degrees the surface drainage of those parts of the city which are most infested by mosquitoes. In this proposal Dr. Taylor cordially concurs, recognising that such work cannot be adequately performed by his staff and that the result cannot fail, not only to relieve him of engineering responsibility, but also to effect a permanent improvement in the sanitary condition of the infested areas. Arrangements have accordingly been made for the immediate surface drainage of a swampy portion of the grass fields district in which Dr. Taylor has already operated to a considerable extent. The cost of the work is estimated at £460 and the amount has readily been voted by the Legislative Council. Mr. Chamberlain has approved of the governor's action and has sanctioned the expenditure of £460."

THE FRENCH GOVERNMENT AND LEAD-POISONING.

IN seeking to defend the hardware manufacturers who use lead for their glaze Mr. Coghill, M.P., speaking in the House of Commons on Feb. 28th, made at least one good point. He not only insisted that the cases of lead-poisoning in the Potteries had steadily fallen from 496 in 1897 to 106 last year, but remarked that in other trades there had been 1057 cases of lead-poisoning. It is certainly true that the grievance is not limited to the Potteries; for instance, house decorators are still victims to the needless employment of lead in the paint which they manipulate. Sir Charles Dilke said that in France many pottery manufacturers used no lead at all and there is no reason why this good example should not be generally followed in England, even though the better precautions now taken have reduced the frequency of saturnine symptoms among the pottery-workers. But while the English manufacturers might follow the example of the French manufacturers so far as the Potteries are concerned the British Government might also seek to imitate the French Government in regard to other trades in which lead is used. The Minister of Commerce, M. Millerand,

constituted by the decree of Dec. 11th, 1900, a Commission of Industrial Hygiene, and the first work of this committee of experts was to investigate the dangers resulting from the use of lead, especially in the manufacture of paint. Further legislation was then promised on the subject and to obtain the necessary information a circular was sent to all the prefects during the month of March, 1901. The circular inquired in what communes, public establishments, and administrative offices the use of lead paint had been forbidden. As a result of this investigation it appears that in 384 communes lead paint was no longer employed. Thereupon a decree was issued on March 25th, 1901, ordering that henceforth no lead paint should be used on any premises belonging to the Ministry of Commerce and Industry of Posts and Telegraphs. This example was soon followed by other Ministers. In August the Minister of Marine decided that no lead paint should be used for any of the ships belonging to the French Navy. During the preceding month of June the Minister of Public Works adopted a similar rule for all that concerned his department. The Minister of War and (in November) the Minister of Public Instruction also issued decrees forbidding the use of lead paint in all places under their control. This is preaching by example and it has always been held that Governments should be model employers. At the same time the Government issued special instructions to all the inspectors of factories and unwholesome industries to exercise a particularly strict surveillance over the lead industries. As a consequence statistics already show that there has been a considerable decrease in the number of cases due to saturnine intoxication. In the report of Professor T. E. Thorpe and Professor T. Oliver on the employment of compounds of lead in the manufacture of pottery, presented to the Government in a blue-book dated Feb. 21st, 1899, it was pointed out (*vide* THE LANCET, April 1st, 1899, p. 919) that much of the ware supplied to the order of the various Government departments, such as the Post Office, the Office of Works, the Admiralty, the War Office, and the India Office, could be dipped in leadless glaze without detriment to its character and with no increase to its cost. We believe that the Government acted as far as was possible in accordance with this suggestion and we trust that it will maintain its energy in this very practical way.

MR. HARRY MAULE CROOKSHANK, F.R.C.S. Edin., British Controller of the Daira Sanieh Administration, has received His Majesty's Royal licence to accept and to wear the Order of the Medjidieh, Grand Cordon, which has been conferred upon him by His Highness the Khedive of Egypt, authorised by His Imperial Majesty the Sultan of Turkey, in recognition of valuable services rendered to His Highness.

THE annual dinner of the Royal Army Medical Corps will take place on Monday, June 16th, at the Whitehall Rooms of the Hôtel Métropole, London, at 7.45 P.M. The honorary secretary of the dinner is Lieutenant-Colonel E. M. Wilson, R.A.M.C., Junior Army and Navy Club, St. James's-street, London, S.W.

WE regret to announce the death of Professor Hans Buchner who died at Munich on April 5th in the fifty-second year of his age. Professor Buchner, who was president of the Hygienic Institute at Munich, was an able bacteriologist and rendered valuable services in the field of preventive medicine.

THE consideration of the Midwives Bill as amended by the Grand Committee has been put down for Wednesday, June 4th, when there is considerable possibility of its being taken.

Pharmacological Notes.

PREVENTION OF PITTING IN SMALL-POX BY THE USE OF FORMALIN-GELATIN OR GLUTOL.

GLUTOL is a whitish powder prepared by exposing sheets of gelatin to the vapour of formalin. This substance is the subject of an article by Mr. John Moir[1] wherein its therapeutic uses are described. In practice, by the solvent action of the living tissue to which this preparation is applied, the gelatin is dissolved and thus liberates the antiseptic factor, the formalin. The value of formalin as an antiseptic in cases of surgical tuberculosis has been recognised during recent years to such an extent that it is largely replacing iodoform-glycerin with its objectionable odour. The solvent action of glutol is facilitated by the addition of lard or of soft paraffin. The following conditions are mentioned in which its use is beneficial: stomatitis (by means of a syringe); suppurative conditions of the mouth, gums, and tongue; carcinoma; epithelioma; tuberculosis; severe burns; and severe chronic ulcers. But it is of special interest to note the recommendation that glutol should be employed, mixed with soft paraffin in the proportion of 1 to 4 or 1 to 8, as a preventive of severe pitting and deep scars from small-pox; this proportion has been found useful in tuberculosis, in carcinomatous and epitheliomatous cases, as well as in severe burns. The addition of a bland emollient vehicle such as soft paraffin is in all cases preferable. With a protective covering of gauze glutol is aseptic. It is found that, generally speaking, the use of glutol prevents the development of exuberant granulations and scars; it is useful in preventing the irritation, scratching, excessive swelling, and inflammation of the eyelids and of the mouth, especially as it is entirely harmless as an application in the mouth, even when swallowed in considerable quantity. Dr. Gustave Daniel of the City Hospital, Bielefeld, found in 1899 that glutol caused improvement in cases of many epithelial diseases, warts, cancroid growths, and in sycosis vulgaris; his observations were confirmed by Dr. Kranefuss, physician-in-chief at that hospital. They found the treatment absolutely trustworthy, although it took more time than most of the remedies; but it was easy to handle, did not cause any special pain, and left no scar. The value of glutol as a preparation for the treatment of wounds has been dealt with by Dr. Heinrich Mohr,[2] by Dr. Heinrich Lobb of Mannheim,[3] and by Dr. Robert Maguire.[4]

MEDICINAL TREATMENT OF TUBERCULOSIS.

Dr. Hugo Winternitz, physician at the Royal Medical University Hospital in Halle on Saale, in an article on the treatment of tuberculosis in hospitals[5] states that hygienic-dietetic therapeutics alone are not sufficient for the treatment of pulmonary diseases. With regard to medicinal treatment even Gerhard, in spite of his former expression that "medicinal treatment of tuberculosis has been a complete failure," is now in favour of special medicinal therapeutics as far as the employment of drugs is concerned. Of these creasote alone has held its own. The use of this drug, however, is sometimes attended by decrease of appetite, disturbed digestion, and diarrhœa. As a result various substitutes for creasote have been introduced—notably, guaiacol and thiocol and their preparations. Guaiacol, the principal constituent of beechwood creasote, only reduced these difficulties without removing them. Various combinations of guaiacol and of creasote with carbonic acid were then introduced—viz., creasotum carbonicum (creasotal), guaiacolum carbonicum (duotal), creasotum valerianicum (eosote), the ester of valerianic acid and guaiacol (geosote), and, finally, thiocol, a sulphuric combination of guaiacol (ortho-guaiacol-sulphate of potassium). Thiocol contains 52 per cent. of guaiacol and is a white micro-crystalline powder, unalterable by exposure to air, of a slightly bitter but not disagreeable taste, and perfectly inodorous; it is soluble in four parts of cold water and has no corrosive effect even in concentrated solutions, a circumstance which may account for the fact that it does not irritate the digestive organs.

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[1] The Therapist, Feb. 15th, 1902, p. 25.
[2] The Therapist, July 15th and August 15th, 1901, pp. 145 and 169.
[3] Ibid., August, 1901, p. 178.
[4] Ibid., p. 179.
[5] Ibid., Feb. 15th, 1902, translated from the Deutsche Aertze Zeitung, vol. i., Jan. 1st, 1902.

Dr. Winternitz gives details of eight out of 16 cases in which thiocol has been used, enabling an opinion to be formed as to the value of this drug. He concludes that thiocol has advantages over creasote or guaiacol, being palatable and free from disagreeable secondary effects. With the exception of complicated cases the appetite improved, the weight of the body increased, nocturnal sweats were reduced, and catarrhal symptoms, when present, decreased. In advanced cases, however, the relief of the cough is only gained by the use of morphine (or its substitutes) the *ultimum refugium*. Codeine and dionine have a sedative effect and a favourable influence on expectoration; they reduce the irritability of the air-passages without limiting the respiratory functions, as experimentally shown by Dr. Winternitz.[6] Dionine is prescribed in doses of from 0·03 gramme, preferably in solution; thus, dionine 0·6 gramme, water 100·0 grammes; one teaspoonful in the evening. Thiocol is conveniently prescribed in the form of a syrup, thus: Thiocol, 10 grammes; water, 40 grammes; fluid extract of orange, five grammes; and simple syrup, 95 grammes. Dose, from three to four teaspoonfuls daily, corresponding to about from one gramme to one and a half grammes of thiocol per diem. (In England the tincture of orange might be prescribed in place of the fluid extract recommended by Dr. Winternitz.) Thiocol may also be given in powders or in tablets in doses of from 0·5 to 1·0 gramme three times a day.

THE NEW BILL ON LAUNDRIES.

(FROM A SPECIAL CORRESPONDENT.)

THE Earl of Lytton has revived the hopes of the much-neglected laundry-workers by obtaining the second reading of his Factory and Workshop Act (1901) Amendment Bill. If legislation for the protection of labour is justifiable it is doubly justifiable in regard to laundry-workers. In this case not only are the workers themselves concerned but it is a matter which intimately affects the entire public. The articles washed are those which are worn nearest to the skin, and if laundries are not well managed they become an active means of spreading disease. Therefore, inspection is more necessary in regard to this business than in regard to many other industries. Yet it is precisely the laundries that were left out of the Factory and Workshop Act which was passed last year. This omission, it will be remembered, was due to the opposition of the Irish Members. They objected to the inspection of laundries established by convents and other religious institutions. It was feared that if this matter was fought out either the session would have to be prolonged or the Bill would have to be abandoned. The Government therefore sacrificed the laundries so as to save the rest of the Bill. Now, however, the question of the laundries is brought forward on its own merits independently of all other questions, and the Bill introduced by Lord Lytton is a considerable improvement on the laundry clauses that were withdrawn from the Bill of 1901. Mr. Ritchie's Bill of 1901 did not include small laundries and it only dealt with the larger laundries where steam-power machinery is employed. The first clause of Lord Lytton's Bill includes the small laundries and assimilates them to workshops while the larger laundries are qualified as factories. From the point of view of the public the small laundries are more dangerous than the large. They are generally in dwelling-houses where cases of small-pox, scarlet fever, &c., may be concealed and may contaminate the linen after it has been washed. From the workers' point of view the employment of children and the working of excessive hours can be more readily concealed in a private dwelling than in a separate building which by reason of its size and the number of persons employed is more like a factory. The second clause of Lord Lytton's Bill applies the same limits to the hours of labour for children and women as exist in other trades, but the clause allows 60 days' overtime in the year, and this is more than is granted for the packing of perishable articles. Unless it be a matter of tactics just to get the Bill through there is no sufficient reason for such exceptional leniency. With the employment of machinery especially it is possible to calculate with mathematical precision exactly the amount of washing that can be done, so there is no need to promise what some exceptional circumstance may render it difficult to fulfil. It is not like the packing of fruit or the curing of fish which depends upon varying factors, such as the weather and the uncertainties of fishing.

The third clause deals with the phase of the question that gives rise to the greatest opposition. A portion—we are pleased to recognise that it is not the whole but only a portion—of the Roman Catholic community is opposed to the inspection of the laundries connected with religious institutions. A great deal of this opposition is sentimental and political and is due to the fear that Catholic and Irish institutions will be overrun by Protestant and Saxon inspectors and that men will obtain a right of entry into convents inhabited solely by women. Though such objections appeal strongly to passion and prejudice they are in themselves very feeble. There is no desire to inspect convents but only these portions of the buildings which have been converted into laundries. Nor is it necessary that the inspector should be a man and a Protestant; there is nothing in the Bill to prevent the appointment of a woman and a Roman Catholic. The fact is that under the broad mantle of religion unfair competition has been organised against commercial enterprise. These so-called charities have proved to be very remunerative concerns. According to the registrar of charities 71 homes have earned in the course of a year £30,670. Five or six of them make more than £1000 annually out of their laundry work. The Penitentiary Home of Edinburgh realises £5000 a year and the work of 15 crippled and feeble inmates of St. Mary's Home at Gloucester yields no less than £580. And this is a growing business, for Lord Lytton explained that the home at Clewer which competes with private enterprise for the washing for Eton College made £1400 in 1899 and £1723 in 1901. But in so far as such institutions are connected with the Church of England the Bishop of Winchester and the Bishop of Rochester expressed in the House of Lords their willingness to see them brought under the Factory and Workshop Regulations. Surely the restraints which the claims of humanity and the laws of hygiene have imposed on commercial enterprise should be more than welcome in religious houses. Those who act in the name of religion, more than any other section of the community, should scorn the protection of secrecy and should court the fullest publicity so as to vindicate the righteousness of their motives.

The necessity of energetic and effective control over laundries is clearly shown by the various reports of His Majesty's inspectors of factories and workshops. In many laundries work is continued from 8 in the morning till 11 at night for four days. Then there is 10 hours' work on the fifth day and none on the sixth and seventh. That this can be avoided is proved by the example of Lancashire and Yorkshire where the women will not, and do not, work longer in the laundries than they do in the textile factories. The crowding of the work of the week into a few days is the cause of many accidents or of ill-health. The whole of the work is done standing. The same grievance exists in other trades but not to the same extent. The difference is due to the excessive hours worked during some days of the week and perhaps to the relaxing effect of the very damp and overheated atmosphere. Then in regard to accidents H.M.'s Inspector's Report for 1900, p. 383, says: "Accustomed to the conditions of life and work among ordinary factory workers, nothing is so striking to the inspector as the spectacle of numbers of young girls from 14 years of age and upwards all legally employed at 10 or 11 o'clock at night in the ordinary factory labour of tending machinery. Passing at night from one factory to another and finding the young calender feeders employed in their mechanical task of 'feeding' the large steam-heated power-driven ironing-rollers with the damp linen to be ironed (a cloud of steam rising as each 'piece' is passing through) it is impossible not to speculate on the effect of the work and the hours of these young girls. One can only feel surprised that accidents are not more numerous when one realises that the slightest carelessness or inattention may result in the fingers or hand being drawn between the hot cylinders and when one considers how easily such inattention may arise in the case of the overtired young workers. In few, if any other industry, are the daily working hours so long. Working and standing in the steamy hot atmosphere of a calender-room from 8 A.M. till 9 or 10 P.M. all the week, with the exception of one day, is an arduous strain on the young constitution."

Clearly it is more important to limit the hours of work done in the course of a day than the total amount done

[6] Therapeutische Monatshefte, September, 1899.

during the whole week. Young girls especially should not be allowed to reach that state of exhaustion which prevents the alertness that is necessary to prevent accidents and which predisposes them to constitutional disease. Nor should such evils, while abolished in commercial undertakings, be allowed to continue in convents. One of the inspectors relates that he received complaints of a religious community where women had been kept at laundry work for 19 hours in one day. If these institutions are established, as is stated in many cases, for the purpose of redeeming women from a life of vice, is it likely that they will attract many penitents when they impose 19 hours at the washtub as an alternative to the freedom of the streets? But if it were known that such abuses would henceforth be impossible, that the women penitents would not be made to work harder than factory operatives, there would surely ensue more numerous conversions. Some religious institutions claim that the laundry work which they do is only an aid to self-support; but it appears that in some cases the profits from washing are 15 times larger than those derived from any other source. The charity has degenerated into a regular business and has therefore no right to exemption from the laws that protect the workers in other commercial enterprises. This is admitted by a great number of Roman Catholics themselves and it is not impossible that, if all the facts were better known, the Church of Rome as well as the Church of England would welcome the proposed legislation.

DEGREES FOR LONDON MEDICAL STUDENTS.

THE following petition from Licentiates of the Royal College of Physicians of London and Members of the Royal College of Surgeons of England has been presented to the governing bodies of the two Colleges.

To the Presidents, Fellows, &c., of the Royal College of Physicians, London, and the Royal College of Surgeons, England.

Whereas it is becoming increasingly important to medical practitioners to have a right to call and style themselves "Dr."

Whereas your petitioners find that in the practice of their profession through their inability to call and style themselves "Dr." they do labour under very great disadvantages in comparison with the graduates of the Universities of Scotland, Ireland, and the Provinces of England, and also in comparison with the licentiates of certain of the examining bodies:

And, whereas your petitioners feel that they have gone through a course of professional study, which is as prolonged and thorough as that laid down for the above graduates and licentiates, and have passed examinations which are equal in severity and strictness to those through which the above graduates and licentiates have passed:

And, whereas your petitioners feel that it is to the interest of the whole medical profession that the Royal College of Physicians, London, and the Royal College of Surgeons, England, should continue to attract students to the metropolitan schools:

And, whereas your petitioners believe that the Royal Colleges can only continue to attract students to the London schools by removing the above-mentioned disabilities.

Your petitioners would therefore pray that the Royal Colleges would:—

(1) Approach the governing body of the New University of London, or some other British university, with a view to obtain for the Licentiates and Members the privilege to offer themselves as candidates for the final examination for a degree in medicine, or

(2) That the Royal Colleges would take some other and independent step to remove the disabilities under which their petitioners labour.

And your petitioners would ever pray, &c.

We have every sympathy with the petitioners in their desire to place the diplomates of the two Royal Colleges on the same footing with regard to a degree as the graduates of Scottish, Irish, and some provincial English universities. In THE LANCET of Nov. 23rd, 1901, p. 1425, we referred at length to a somewhat, if not exactly, similar circular which it was proposed to present to the Royal Colleges. We also gave a short *résumé* of what has been done from time to time ever since 1885 and we cannot see that anything more remains which can be done, unless, indeed, by the foundation of a new university. Still, perseverance has before now overcome apparently insuperable obstacles; ἐς Τροίαν πειρώμενοι ἦνθον Ἀχαιοί, as the old woman said in Theocritus, and a grievance is not the worse for being kept prominently before the public. Degrees can at present, in these islands, be obtained from only two sources—namely, a university and His Grace the Archbishop of Canterbury.[1] (The Archbishop's power is practically in abeyance, for in the case of medicine it is never exercised.) The petitioners' first line of attack is to petition the Royal Colleges to approach the newly constituted University of London or some other British university with a view to obtain for diplomates of the Royal Colleges the privilege of offering themselves as candidates for the final examination for a degree in medicine. In case of this method of attack failing the Royal Colleges are requested to take some other step to remove the disabilities under which their petitioners labour. As regards the first proposal we doubt whether the Royal Colleges will accede to the request and even if they do it is more than doubtful whether the University of London or any other university will consent to any relaxation of the tests at present surrounding their degrees. This may seem a hard saying but it is true and the truth is often bitter.

The only way out of the difficulty which appears to us to be at all feasible is the foundation of a new university in London. This plan was put forward as a solution of the problem in the report of the delegates appointed by the two Royal Colleges to consider the question at issue, and the report will be found at length in THE LANCET of Dec. 18th, 1886, p. 1194. The next step after the issue of this report was an application to the Crown for power to be given to the Colleges to grant degrees. This application was referred to the Royal Commission on Higher Education in London and on April 28th, 1889, was unanimously rejected.

If, then, the petitioners should fail to induce the Colleges to apply to the University of London and the other British universities, or in case they do apply and the universities refuse to grant their request, it appears to us that the "some other and independent step" has already been taken without advancing matters.

[1] Phillimore: Ecclesiastical Law, 1895, p. 1565.

ASYLUM REPORTS.

London County Asylum, Hanwell (Report for the year ending March 31st, 1901).—The average number of patients resident during the year was 2516 and comprised 902 males and 1614 females. The admissions during the year amounted to 548, including 259 males and 289 females. Of these, 442—viz., 207 males and 235 females—were first admissions. Dr. R. R. Alexander, the medical superintendent, states in his report that "as to the forms of mental disease [among the admissions] general paralysis was accountable for 15 per cent. of the males and nearly 4 per cent. of the females, as compared with 14 per cent. and 4 per cent. respectively in 1899, and 14 per cent. and 3 per cent. in 1898." General paralysis among the male admissions had fallen somewhat irregularly from 27 per cent. in 1894 to 15 per cent. in 1900, and in that time the female cases of general paralysis had also fallen considerably, but the proportion of the sexes (three or four men to one woman affected with general paralysis) remained unaltered. "It would at last really seem," adds Dr. Alexander, "as if general paralysis is relaxing its hold on that part of the community whence we obtain our patients. And our experience is by no means singular." As regards the causes of insanity in the admissions it appeared that alcoholic intemperance accounted for 25 per cent. of the male admissions, as compared with 20 per cent. in 1899 and 15 per cent. in 1898. Among the females 13 per cent. were due to the same cause. Previous attacks of insanity had occurred in 21 per cent. of the males and 22 per cent. of the females admitted, while a hereditary tendency to insanity could be traced in 26 per cent. of the males and 21 per cent. of the females. "We have to deplore the admission of a good many feeble senile patients who are brought to the asylum practically to pass therein the few days of life remaining to them,.....and one would fain hope before long that workhouse infirmaries will be provided with the means of properly treating and indefinitely retaining such cases." The number of patients discharged as recovered during the year was 218, including 81 males and 137 females, or 8·6 per cent. of the average number resident. The deaths during the year amounted to 232—viz., 103 males and 129 females, or 9·2 per cent. as calculated on the same basis. Of the deaths two were due to Bright's disease, four to epilepsy, six to colitis, 11 to cancer, 11 to cerebral hæmorrhage, 14 to cerebral softening, 20 to bronchitis, 21 to senile decay, 22 to pulmonary phthisis, 25 to cardiac disease, 32 to pneumonia, 38 to general paralysis of the insane, and the rest to other causes.

The Commissioners in Lunacy did not make a visit during the year under review. The asylum sub-committee states in its report that a sum of £453 was spent in laundry improvements, that the farms and fields were in a good state of cultivation, and that the live stock was healthy. The sum of £354 was spent in additions and alterations and the sum of £8975 in repairs during the year.

St. Andrew's Hospital for Mental Diseases, Northampton (Annual Report for 1901).—This is a hospital for the reception of insane patients of the middle and upper classes, the rates of payment being 42*s.* and 25*s.* per week respectively for first and second class accommodation. The average number of patients resident during the year was 402, comprising 191 males and 211 females. The admissions during the year amounted to 107—viz., 44 males and 63 females. Mr. Joseph Bayley, the medical superintendent, states in his report that "the hospital and all the houses have been quite full during the greater part of the year. 158 patients have had the advantage of a change of air and scene at our new house, Bryn-y-Neuadd Hall, North Wales. This is a much larger number than we have ever been able to send before. The place is much liked, both by patients and by their friends who have been there." During the year 41 patients were discharged as recovered—viz., six males and 31 females, or 10·2 per cent. of the average number resident. The deaths during the year amounted to 12—viz., nine males and three females, or 2·9 per cent. as calculated on the same basis. Of the deaths one each was due to cardiac disease, aneurysm, apoplexy, and bronchitis, two were due to senile decay, three to general paralysis of the insane, and the rest to other causes. One patient while out on trial at her own home committed suicide with a revolver. "The hospital and the houses belonging to it have been free from infectious disease, with the exception of the house in North Wales where a servant fell ill with typhoid fever. ..... She was placed under treatment in one of the detached houses and recovered." The committee of management has recently sanctioned a larger outlay for entertainments to enable the engagement of theatrical companies from London; so far this has been a great success and the patients are much pleased with it. The Commissioners in Lunacy state in their report that they visited the institution twice during the year and found on each occasion that the patients were comfortable, that the building was in admirable order, that the day rooms and dormitories were airy, bright, comfortable, and scrupulously clean, and that the case-books were well and intelligently kept. The branch establishment in North Wales was also visited and everything was found in the best possible order.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8662 births and 5010 deaths were registered during the week ending April 5th. The annual rate of mortality in these towns, which had been 17·6 and 18·2 per 1000 in the two preceding weeks, declined again to 17·6 per 1000 last week. In London the death-rate was 17·9 per 1000, while it averaged 17·4 in the 75 other large towns. The lowest death-rates in these towns were 9·3 in Bournemouth, 9·9 in York, 10·5 in East Ham, 10·6 in Leyton, 11·0 in Hornsey, 11·2 in West Hartlepool, 11·3 in Bootle, and 11·7 in Tottenham; the highest rates were 21·5 in Liverpool and in Leeds, 21·8 in Middlesbrough, 22·0 in Tynemouth, 22·2 in Merthyr Tydfil, 22·9 in Wigan, 26·5 in Plymouth, and 29·2 in Burnley. The 5010 deaths in these towns last week included 572 which were referred to the principal zymotic diseases, against 553 and 602 in the two preceding weeks; of these 572 deaths 171 resulted from measles, 128 from whooping-cough, 77 from small-pox, 72 from diphtheria, 54 from diarrhœa, 42 from scarlet fever, and 28 from "fever" (principally enteric). No death from any of these diseases was registered last week in Hornsey, Hastings, Brighton, Bournemouth, Ipswich, Coventry, Grimsby, Bootle, Rotherham, West Hartlepool, or Tynemouth; while the highest zymotic death-rates were recorded in Croydon, Willesden, Handsworth, Aston Manor, Birkenhead, Burnley, Barrow-in-Furness, South Shields, and Rhondda. The greatest proportional mortality from measles occurred in Willesden, Burnley, Barrow-in-Furness, Huddersfield, Stockton-on-Tees, and Merthyr Tydfil; from scarlet fever in St. Helens; from diphtheria in Croydon, Swansea, and Rhondda; from whooping-cough in Handsworth, Aston Manor, Wallasey, and Barrow-in-Furness; from "fever", in Handsworth, Aston Manor, and Birkenhead; and from diphtheria in Walsall. The 77 deaths from small-pox registered last week included 54 of persons belonging to London, 10 to West Ham, four to East Ham, two each to Croydon, Tottenham, and Leeds, and one each to Leyton, Walthamstow, and Southampton. There were 1522 cases of small-pox under treatment in the Metropolitan Asylums hospitals on Saturday, April 5th, against 1542, 1567, and 1526 at the end of the three preceding weeks; 376 new cases were admitted during the week, against 450, 449, and 389 in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital, which had declined from 3137 to 2147 on the 14 preceding Saturdays, had further decreased to 2126 at the end of last week; 228 new cases were admitted during the week, against 266, 258, and 250 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had declined from 885 to 360 in the six preceding weeks, further decreased last week to 317 and were 75 below the corrected average number. The causes of 69, or 1·4 per cent., of the deaths in the 76 large towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Portsmouth, Bristol, Nottingham, Bolton, Salford, Cardiff, and 38 other smaller towns. The largest proportions of uncertified deaths were registered in Northampton, Burton-on-Trent, Liverpool, St. Helen's, Preston, Halifax, Stockton-on-Tees, and Gateshead.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had been 23·7 and 20·3 per 1000 in the two preceding weeks, rose again to 21·3 per 1000 during the week ending April 5th, and was 3·7 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 16·0 in Paisley and 17·2 in Perth to 23·4 in Dundee and 26·5 in Greenock. The 687 deaths in these towns included 15 which were referred to diarrhœa, 14 to whooping-cough, 11 to measles, eight to scarlet fever, five to diphtheria, four to "fever," and two to small-pox. In all 59 deaths resulted from these principal zymotic diseases last week against 85, 83, and 59 in the three preceding weeks. These 59 deaths were equal to an annual rate of 1·8 per 1000, which was slightly below the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 25 and 22 in the two preceding weeks, further declined last week to 15, of which nine were registered in Glasgow, three in Dundee, and two in Aberdeen. The deaths from whooping-cough, which had been 23, 28, and 13 in the three preceding weeks, rose again to 14 last week and included seven in Glasgow, two in Edinburgh, and two in Aberdeen. The fatal cases of measles, which had been 14, 11, and 14 in the three preceding weeks, declined again last week to 11, of which five occurred in Glasgow, and five in Dundee. The deaths from scarlet fever, which had been eight, five, and three in the three preceding weeks rose again to eight last week, and included four in Greenock and three in Glasgow. The fatal cases of diphtheria, which had been four and six in the two preceding weeks, declined again last week to five, of which three were registered in Glasgow. The deaths referred to "fever," which had been four, four, and one in the three preceding weeks, rose again to four last week, and included two in Glasgow, where the two fatal cases of small-pox also occurred. The deaths from diseases of the respiratory organs in these towns, which had been 189, 217, and 173 in the three preceding weeks, further declined last week to 160, but were 10 in excess of the number in the corresponding period of last year. The causes of 29, or more than 4 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 20·6, 22·4, and 27·5 per 1000 in the three preceding weeks, declined again to 26·8 per 1000 during the week ending April 5th. During the past four weeks the death-rate averaged 24·3 per 1000, the rates during the same period being 19·3 in London and 18·7 in Edinburgh. The 195 deaths of

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MARCH, 1902.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1902.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.													
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cholera.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.	Deaths of infants under one year to 1000 births.
LONDON	**4,579,107**	**1652**	**1218**	**840**	**—**	**135**	**4**	**16**	**298**	**—**	**4163**	**11·9**	**275**	**267**	**38**	**96**	**199**	**—**	**26**	**—**	**45**	**946**	**2·7**	**7166**	**20·4**	**135**
West Districts.																									
Paddington	145,107	19	21	16	—	8	—	1	13	—	78	7·0	1	19	—	2	—	—	1	—	1	24	2·2	230	20·7	131
Kensington	177,605	15	27	10	—	2	1	2	9	—	66	4·8	3	17	2	2	1	—	—	—	—	25	1·8	256	18·8	133
Hammersmith	114,210	13	15	21	—	1	—	—	5	—	55	6·3	2	7	1	1	2	—	—	—	—	13	1·5	165	18·8	126
Fulham	143,102	19	30	31	—	5	—	1	7	—	93	8·5	1	46	—	—	4	—	—	—	5	56	5·1	264	24·0	166
Chelsea	74,018	7	17	8	—	—	—	—	2	—	34	6·0	—	1	1	—	1	—	—	—	1	4	0·7	125	22·0	147
City of Westminster	180,800	32	27	17	—	1	—	—	9	—	86	6·2	9	5	1	2	2	—	1	—	2	22	1·6	252	18·2	96
North Districts.																									
St. Marylebone	132,069	34	12	19	—	5	—	1	15	—	86	8·5	7	37	—	3	1		1	—	1	50	4·9	253	25·0	148
Hampstead	83,743	5	11	5	—	1	—	—	4	—	26	4·0	1	1	—	2	—	—	1	—	1	6	0·9	86	13·4	94
St. Pancras	235,596	68	88	81	—	6	—	—	14	—	257	14·2	14	8	7	10	10	—	—	—	—	49	2·7	381	21·1	129
Islington	337,268	67	85	86	—	11	—	—	19	—	268	10·4	9	13	5	11	15	—	2	—	2	57	2·2	525	20·3	132
Stoke Newington	51,700	12	22	9	—	—	—	—	1	—	44	11·1	2	—	—	1	5	—	—	—	1	9	2·3	64	16·1	167
Hackney	221,926	99	63	69	—	5	2	1	21	—	260	15·3	8	6	—	8	15	—	—	—	2	39	2·3	319	18·7	131
Central Districts.																									
Holborn	58,535	34	12	10	—	2	—	—	6	—	64	14·3	7	1	2	—	3	—	—	—	1	14	3·1	117	26·1	136
Finsbury	100,487	33	19	17	—	4	—	1	9	—	83	10·8	6	11	—	4	5	—	1	—	—	27	3·5	191	24·8	137
City of London	25,598	7	4	8	—	—	—	—	2	—	21	10·7	—	2	—	1	—	—	—	—	—	3	1·5	45	22·9	143
East Districts.																									
Shoreditch	117,980	84	23	24	—	2	1	—	4	—	138	15·2	18	12	1	3	13	—	—	—	1	48	5·3	241	26·6	194
Bethnal Green	129,889	141	47	29	—	2	—	1	11	—	231	23·1	14	7	—	2	16	—	1	—	1	41	4·1	237	23·8	139
Stepney	300,551	327	47	52	—	17	—	1	19	—	463	20·1	66	13	1	3	21	—	3	—	5	112	4·9	550	23·9	149
Poplar	169,214	138	49	33	—	5	—	—	10	—	235	18·1	21	10	1	2	8	—	2	—	3	47	3·6	286	22·8	122
South Districts.																									
Southwark	206,825	89	56	33	—	5	—	—	24	—	207	13·0	16	9	3	6	9	—	1	—	4	48	3·0	382	24·1	181
Bermondsey	130,218	30	33	22	—	5	—	—	8	—	98	9·8	2	—	2	2	10	—	—	—	1	17	1·7	228	22·8	140
Lambeth	305,102	53	84	24	—	9	—	3	14	—	187	8·0	12	3	—	3	12	—	—	—	3	33	1·4	454	19·4	118
Battersea	171,401	30	61	18	—	2	—	—	8	—	119	9·1	3	12	2	2	5	—	1	—	3	28	2·1	240	18·3	154
Wandsworth	241,810	24	102	65	—	11	—	2	14	—	218	11·8	8	14	3	7	7	—	6	—	—	45	2·4	314	16·9	106
Camberwell	262,775	87	115	67	—	11	—	1	17	—	298	14·8	12	—	3	12	10	—	1	—	2	40	2·0	350	17·4	144
Deptford	111,577	42	45	14	—	5	—	—	10	—	116	13·6	14	1	—	2	2	—	1	—	3	23	2·7	168	19·6	174
Greenwich	98,013	32	27	9	—	1	—	—	6	—	75	10·0	5	8	1	—	4	—	—	—	—	18	2·4	150	19·9	153
Lewisham	132,432	40	49	32	—	5	—	—	9	—	135	13·3	4	—	1	4	10	—	2	—	—	21	2·1	133	13·1	71
Woolwich	119,566	68	27	11	—	4	—	1	8	—	119	13·0	10	4	1	1	8	—	1	—	2	27	2·9	150	16·4	107
Port of London	-	3	—	—		—	—	—	—	—	3	-	-	-	-	-	—	—	—	—	—	—	—	-	-	-

* Including membranous croup.

persons belonging to Dublin registered during the week under notice showed a decline of five from the number in the preceding week, and included six which were referred to the principal zymotic diseases, against eight, six, and seven in the three preceding weeks; of these, two resulted from diphtheria, and one each from measles, scarlet fever, "fever," and diarrhœa. These six deaths were equal to an annual rate of 0·8 per 1000, the zymotic death-rates during the same period being 2·4 in London and 0·6 in Edinburgh. The 195 deaths in Dublin last week included 28 of children under one year of age and 51 of persons aged upwards of 60 years; the deaths of infants showed a slight decline from the number recorded in the preceding week, while those of elderly persons were slightls in excess. Nine inquest cases and four death from violence were registered, and 76, or more than a third, of the deaths occurred in public institutions. The causes of 12, or more than 6 per cent., of the deaths registered in Dublin last week were not certified.

VITAL STATISTICS OF LONDON DURING MARCH, 1902.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in each of the cities and boroughs in the county of London. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 11·9 per 1000 of the population, estimated at 4,579,107 persons in the middle of the year. In the three preceding months the rates had been 10·6, 11·4, and 11·4 per 1000 respectively. The rates were considerably below the average in Kensington, Hammersmith, Chelsea, the City of Westminster, and Hampstead, while they showed the largest excess in Hackney, Shoreditch, Bethnal Green, Stepney, and Poplar. During the four weeks ending March 29th the number of small-pox cases notified showed a further increase as compared with recent months; the greatest proportional prevalence of this disease was recorded in Holborn, Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Woolwich. The Metropolitan Asylums hospitals contained 1526 small-pox patients at the end of March, against 666, 1135, and 1309 at the end of the three preceding months; the weekly admissions averaged 461, against 173, 297, and 390 in the three preceding months. The prevalence of scarlet fever last month showed a slight increase over that recorded during February; among the various metropolitan boroughs this disease was proportionally most prevalent in St. Pancras, Stoke Newington, Bethnal Green, Battersea, Wandsworth, Camberwell, Deptford, and Lewisham. The number of scarlet fever patients under treatment in the Metropolitan Asylums hospitals, which had been 3080, 2501, and 2250 at the end of the three preceding months, had further declined to 2113 on Saturday, March 29th; the weekly admissions averaged 206, against 297, 266, and 234 in the three preceding months. The prevalence of diphtheria last month was slightly greater than in the preceding month; this disease was proportionally most prevalent in St. Pancras, Islington, Hackney, the City of London, Wandsworth, Camberwell, and Lewisham. There were 1123 diphtheria patients under treatment in the Metropolitan Asylums hospitals at the end of March, against 1369, 1231, and 1154 at the end of the three preceding months; the weekly admissions averaged 156, against 160, 167, and 154 in the three preceding months. Enteric fever was considerably less prevalent during March than in either of the two preceding months; among the various metropolitan boroughs enteric fever was proportionally most prevalent in Paddington, Stepney, Finsbury, Wandsworth, Camberwell, and Deptford. The number of enteric fever patients under treatment in the Metropolitan Asylums hospitals, which had been 195, 128, and 142 at the end of the three preceding months, had declined again to 121 at the end of March; the weekly admissions averaged 17, against 21, 18, and 22 in the three preceding months. Erysipelas was proportionally most prevalent in Paddington, St. Marylebone, Hackney, Holborn, and Southwark. The 16 cases of puerperal fever notified during the month included three in Lambeth, two in Kensington, and two in Wandsworth.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various metropolitan boroughs in which the deceased persons had previously resided. During the four weeks ending March 29th the deaths of 7166 persons belonging to London were registered, equal to an annual rate of 20·4 per 1000, against 18·8, 18·3, and 25·9 per 1000 in the three preceding months. The lowest death-rates last month in the various metropolitan boroughs were 13·1 in Lewisham, 13·4 in Hampstead, 16·1 Stoke Newington, 16·4 in Woolwich, and 16·9 in Wandsworth; the highest rates were 24·1 in Southwark, 24·8 in Finsbury, 25·0 in St. Marylebone, 26·1 in Holborn, and 26·6 in Shoreditch. The 7166 deaths from all causes included 275 from small-pox, 267 from measles, 38 from scarlet fever, 96 from diphtheria, 199 from whooping-cough, 26 from enteric fever, and 45 from diarrhœa; in all, 946 deaths were referred to these principal zymotic diseases, equal to an annual rate of 2·7 per 1000. The lowest death-rates last month from these diseases were 0·7 in Chelsea, 0·9 in Hampstead, 1·4 in Lambeth, 1·5 in Hammersmith and in the City of London, and 1·6 in the City of Westminster; the highest rates were 4·1 in Bethnal Green, 4·9 in St. Marylebone and in Stepney, and 5·1 in Fulham. The 275 fatal cases of small-pox showed a further increase over the numbers in recent months; the greatest proportional mortality from this disease occurred in Holborn, Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, Deptford, and Woolwich. The 267 deaths from measles were slightly in excess of the average number in the corresponding periods of the 10 preceding years; among the various metropolitan boroughs this disease was proportionally most fatal in Paddington, Kensington, Fulham, St. Marylebone, Finsbury, Shoreditch, and Greenwich. The 38 fatal cases of scarlet fever showed a decline of 13 from the corrected average number; the greatest proportional mortality from this disease was recorded in St. Pancras, Islington, Holborn, Southwark, and Bermondsey. The 96 deaths from diphtheria were 40 per cent. below the average number in the corresponding periods of the 10 preceding years. Among the various metropolitan boroughs this disease was proportionally most fatal in St. Pancras, Islington, Hackney, Finsbury, and Camberwell. The 199 fatal cases of whooping-cough showed a decline of 54 from the average number in the corresponding periods of the 10 preceding years; the greatest proportional mortality from this disease occurred in Stoke Newington, Shoreditch, Bethnal Green, Bermondsey, and Lewisham. The 26 deaths referred to enteric fever were slightly below the corrected average number; among the various metropolitan boroughs this disease was proportionally most fatal in Hampstead, Stepney, Poplar, Wandsworth, and Lewisham. The 45 fatal cases of diarrhœa also showed a slight decline from the average number; the highest death-rates from this disease were recorded in Fulham, Stepney, Poplar, Southwark, Battersea, Deptford, and Woolwich. In conclusion, it may be stated that the aggregate mortality in London last month from these principal zymotic diseases was more than 6 per cent. above the average.

Infant mortality in London during March, measured by the proportion of deaths among children under one year of age to registered births, was equal to 135 per 1000. The lowest rates of infant mortality were recorded in the City of Westminster, Hampstead, Battersea, Wandsworth, Lewisham, and Woolwich; and the highest rates in Fulham, Stoke Newington, Shoreditch, Southwark, and Deptford.

THE SERVICES.

ARMY MEDICAL SERVICE.

THE undermentioned Colonels to be Surgeon-Generals:—William F. Burnett, Royal Army Medical Corps, vice J. Jameson, C.B., placed on retired pay. Dated June 1st, 1901. Edmond Townsend, C.B., C.M.G., Royal Army Medical Corps, vice W. A. Catherwood, deceased. Dated Sept. 25th, 1901. William H. McNamara, C.B., C.M.G., Royal Army Medical Corps, vice H. S. Muir, C.B., placed on the supernumerary list. Dated Oct. 4th, 1901. Sir Thomas J. Gallwey, K.C.M.G., C.B., Royal Army Medical Corps, vice T. F. O'Dwyer, placed on retired pay. Dated Dec. 26th, 1901.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel G. T. Trewman is appointed to the Home District for duty. Lieutenant-Colonel W. A. Parker, Reserve of Officers, proceeds to Exeter for duty, in medical charge of the 11th Regimental District, and Lieutenant-Colonel W. B. Slaughter joins for general duty in the Southern District.

IMPERIAL YEOMANRY.

Buckinghamshire (Royal Bucks Hussars): Surgeon-Captain Leonard Arthur Bidwell, from Middlesex Garrison Artillery (Volunteers), to be Surgeon-Captain. Yorkshire Hussars (Princess of Wales's Own): Walter Henry Cheetham to be Surgeon-Lieutenant.

VOLUNTEER CORPS.

Rifle: 1st Volunteer Battalion the Prince Albert's (Somersetshire Light Infantry): Surgeon-Lieutenant R. G. Worger to be Surgeon-Captain. 2nd Volunteer Battalion the Manchester Regiment: John Alfred Knowles Renshaw to be Surgeon-Lieutenant.

VOLUNTEER INFANTRY BRIGADE.

Durham Light Infantry: Surgeon-Lieutenant-Colonel T. A. McCullagh, 2nd Volunteer Battalion the Durham Light Infantry, to be Brigade-Surgeon-Lieutenant-Colonel whilst holding the appointment of Senior Medical Officer to the Brigade.

Highland Light Infantry: Surgeon-Lieutenant-Colonel D. Cowie, 5th (Glasgow Highland) Volunteer Battalion the Highland Light Infantry, to be Brigade-Surgeon-Lieutenant-Colonel whilst holding the appointment of Senior Medical Officer to the Brigade.

2nd London: Surgeon-Major W. D. Waterhouse, 1st Tower Hamlets Volunteer Rifle Corps, to be Brigade-Surgeon-Lieutenant-Colonel whilst holding the appointment of Senior Medical Officer to the Brigade.

East Surrey: Surgeon-Lieutenant-Colonel W. Gandy, 2nd Volunteer Battalion the East Surrey Regiment, to be Brigade-Surgeon-Lieutenant-Colonel whilst holding the appointment of Senior Medical Officer to the Brigade.

West Surrey: Surgeon-Major F. R. Russell, 2nd Volunteer Battalion the Queen's (Royal West Surrey Regiment), to be Brigade-Surgeon-Lieutenant-Colonel whilst holding the appointment of Senior Medical Officer to the Brigade.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain J. Adams to be Surgeon-Major.

SOUTH AFRICAN WAR NOTES.

Civil Surgeon A. L. Hoops is reported severely wounded during the repulse of Delarey at Boschbult, Kleinhardts River, on March 31st.

Lieutenant W. S. Crosthwait, R.A.M.C., has been discharged from hospital for duty.

Lieutenant A. O. B. Wroughton, R.A.M.C., and Civil Surgeons Roberts, Wethered, Kernohan, Cornwall, and Maunsell are on passage home from South Africa.

AFFAIRS IN SOUTH AFRICA.

Several events of a more or less stirring character have taken place in South Africa of late. In the first place, there have been several encounters and a good deal of severe fighting—with Delarey's force in particular. Both sides have possibly been desirous by their renewed activity in the field of influencing the course of the pending peace preliminaries. Be this as it may it is calculated that the total number of the Boer forces still amounts to 8000. Considering the Boer tactics and the extent of territory over which the operations extend the "wearing down" process and the use of columns in sweeping the country seem to be the only methods on which any reliance can be placed. It is very uncertain whether any satisfactory peace proposals on the side of Mr. Schalk Burger and his party will arise out of the Boer conferences. The only way to peace is apparently through an active prosecution of war on our part. We know, and have known all along, little or nothing trustworthy about the losses on the part of the Boers, but these must have been heavy of late. The total reduction of the military forces on the British side through war in South Africa has, according to the War Office return of April 7th, been as follows. The deaths of officers and men in South Africa have amounted to 1020 officers and 20,031 non-commissioned officers and men; the missing and prisoners number 136; and the invalids sent home who have died or have left the service as unfit number over 5700 officers and men. The total reduction in officers, non-commissioned officers, and men from all causes amounts to 26,954. Although there is still much enteric fever it is, on the whole, less prevalent than it was and the sickness is attributed more to "other causes" than was the case some time ago. In proportion as the facts about the concentration camps have become better known and as observations gathered on the spot by capable and impartial persons have been published so has a great change taken place in public opinion in regard to this subject; reasonable people have come to recognise that all that was possible at the time was done. The institution of refugee camps for the unprotected wives and families of the Boers left on the veldt was a vastly responsible and difficult undertaking which probably no other nation under similar circumstances would have attempted. The organisation and arrangements of these camps were necessarily bad and incomplete at first. This was inevitable, seeing that they were a perfectly new institution in war, but these difficulties were eventually overcome and they are now well organised under medical officials from India accustomed to the work of famine relief in that country.

DEATHS IN THE SERVICES.

Surgeon-Captain George Ramsay, I.M.S., Residency surgeon, Baghdad, on March 24th, at Baghdad, Turkish Arabia, in his thirty-fourth year. He served with the Chitral Expedition (medal and clasp) and in 1894 he was appointed to Guntok, in Sikkim, as medical officer. In 1896 he was appointed as acting Residency surgeon at Baghdad and assistant political agent.

Surgeon-General James Champion Penny (retired), at his residence, in Nevern-square, London, S.W., on April 3rd. The deceased officer was 72 years of age. He took part in the relief of Lucknow and Cawnpore during the Indian Mutiny, receiving the medal and clasp. He was a student of St. George's Hospital, where he distinguished himself, and he graduated at London University, of which he was an M.D. He then became medical tutor at Neville Hall, Newcastle-on-Tyne, in connexion with the University of Durham and the Newcastle Medical School, a post which he held for some little time before entering the Indian Medical Service. He served for a long time in India where he made many friends and was well known and greatly respected.

Inspector-General Hugh Martin Macpherson, I.M.S. (Bengal), retired, at his residence in Arlington-street, London, S.W., on April 4th, in his eighty-second year.

QUEEN ALEXANDRA'S IMPERIAL NURSING SERVICE.

We understand that the Nursing Board of Queen Alexandra's Imperial Military Nursing Service will be constituted as follows:—President, Her Majesty the Queen; Vice-President, the Countess Roberts; Chairman, the Director-General, Army Medical Service, or in his absence the Deputy Director-General; two members of the Advisory Board, Sir F. Treves, K.C.V.O., C.B., and Major W. G. Macpherson, Royal Army Medical Corps; matron-in-chief, Miss S. Brown (temporary); two matrons of civil hospitals, Miss Gordon and Miss Monk; representative of the India Office, to be named later by the Secretary of State for India; and two members to be nominated by Her Majesty, the Viscountess Downe, and the Hon. Sydney Holland.

NAVAL MEDICAL SUPPLEMENTAL FUND.

At the quarterly meeting of the Directors of the Naval Medical Supplemental Fund, held on April 8th, when Sir J. N. Dick, K.C.B., presided, the sum of £71 was distributed among the several applicants.

AN IMPROVED PHONOGRAPH.—As mentioned in THE LANCET of Jan. 11th, 1902, p. 131, Mr. Stroh's new violin was shown and played upon not many days previously at the Royal Institution. On April 7th it was shown by Mr. Stroh at an evening meeting held in the Camera Club, Charing Cross-road, but it was not played on, as about two hours were agreeably spent in the reproduction of music and recitations by Mr. Stroh's phonograph. A special feature of this instrument is the diaphragm which is about two and a half inches in diameter and consists of a stripped celluloid photographic film having a large part of its surface covered by a centrally placed cone carrying the usual rounded sapphire point at its apex. This cone is made of stiff writing paper and has an extremely obtuse angle. About a dozen instrumental pieces were given, several of them being performances by a London regimental band, including selections from *Lohengrin*, *Cavalleria Rusticana*, *Faust*, and *Tannhäuser*. The phonograph was well heard in all parts of a large room; its enunciation was loud, clear, and almost free from nasal quality. The respective sounds of wood and stringed instruments playing together could be easily distinguished and individual qualities in the voices both of vocalists and reciters were well preserved.

Correspondence.

"Audi alteram partem."

THE REORGANISATION OF THE ARMY MEDICAL SERVICE.

To the Editors of THE LANCET.

SIRS,—The promulgation of the Royal Warrant is a definite step in the proposed scheme of army medical reform and comprises that section of it which requires Royal assent, the remaining sections coming within the range of action of the Secretary of State for War and other officials to be subsequently embodied in regulations, instructions, orders, &c. It requires but a brief comparison of the Warrant with the War Office scheme as previously set forth to recognise how large and important are the complementary details left untouched by it; indeed, the Warrant, mainly relating to pay and its governing conditions and rank, may be regarded rather as a bid for candidates than as an exponent of the intentions of the authorities towards placing the future medical staff on an efficient basis for the large and important duties—professional, sanitary, and military—entrusted to it during peace and war. And yet this Warrant will probably be relied on by the young medical man towards deciding him in the adoption or otherwise of the army as a fit sphere for his professional career, as possible of giving him a fair field for his livelihood and for his life's work and a fair opportunity for obtaining for his talents and professional and scientific acquirements and labours such recognition as he is entitled to and such as would probably fall to his lot did his life's work lie in the civil sphere. How far this Warrant will operate in favour of the service remains to be seen, but it requires to be read, and should be read, by all aspirants in conjunction with the details which are to follow and to supplement it; sufficient, however, is forthcoming to show clearly that the authorities in improving the pay of some of the respective ranks and giving additional and charge pay and other advantages under certain specified conditions require a very decided *quid pro quo* in the shape of up-to-date attainments so far as these can be gauged by examinations, inspections, reports, or otherwise, should these tests be efficiently and strictly carried out. That these features will tend not only to curtail the number of aspirants to an army career but also to maintain a fair average professional status throughout the service of the future may be granted, yet the inducements held out towards personal professional and scientific progress seem decidedly insufficient for the wants of the case. To illustrate my meaning let one note the high position given to "distinguished service in the field"—a possible incident only in the career of the individual and limited both in range of action and in future utility—towards promotion and special reward as compared to that given to "distinction in original investigation or research,"—open to all independent of time and place and generally valuable irrespective of such exceptional circumstance as war—which is relegated in the Warrant to a footnote, a "Secretary of State's instruction." It is, of course, possible that such professional and scientific advance may find recognition under the principle of "selection" for promotion to the rank of lieutenant-colonel and upwards, yet it requires to be noted that so far the grounds on which this principle is to operate are not stated to embrace these features, while the division of agency for the right execution of the principle as embodied in the scheme, annulling all assessable personal responsibility for the result, leaves much to be desired in respect to this important function. However, speaking generally, it will probably be allowed that the governing features of this Warrant are of a character to improve the future professional status of the Army Medical Service, and their outcome in practice must be left for time and experience to determine.

But my main object is not so much to direct attention to what is officially on record, or to the other hardly less important details still wanted to complete the scheme, and to which you, Sirs, refer in the leading article of THE LANCET of April 5th, p. 977, as to point out that, all said, Warrants, regulations, instructions, and orders are but means to an end, which in themselves necessary and important are insufficient to place our future medical service on the ambitious height desired by the Secretary of State for War—*secundus nulli*; they require not only to be honestly and thoroughly carried out but also to have full and sufficient provision and scope for right and efficient action—a proper environment. That the authorities are now full of good intentions and the country also may be granted, but the more important question is, what will the army conditions be when the distress of the present war has ceased to operate and when the present excitants to action have been succeeded by the recoil of weariness and possible apathy—how far the environment will be such as to foster and to mature this scheme which needs for its full and complete development the combined good-will and honest support of so many army sections, placed as the medical service is among the other constituents of the military organisation? That the service as proposed will be very costly no one can doubt, and this feature will require a strong and sympathetic War Minister to obtain for it the necessary pecuniary supplies; that it will need the full acquiescence and firm support of the army generally from the Commander-in-Chief downwards in order to give it a fair field to work in will be easily grasped by those who know from practical experience in the past what the opposite conditions are capable of as antagonising agencies to any scheme subject to the disfavour of its higher powers; that it will need a Director-General professionally no less than militarily competent, fully alive to the requirements of the times as bearing on the many-sided character of his department, capable of initiating and fostering a professional and scientific *esprit de corps* and zealous in maintaining its rightful position among the other army sections, is no less apparent. And in view of these essentials, when one recalls the noble purposes of the commission following the Crimean disasters, the high hopes entertained of its practical outcome—the Magna Charta of the department as it was then regarded—whereby "men of high professional qualifications were at once attracted to the service," and contrasts the state of affairs brought about by some 30 years of official indifference and neglect and army opposition, leading practically to a shunning of the army by the profession, and rightly so, the thought arises in the mind whether the past may not repeat itself and this new Warrant and scheme go the way of the outcome of the labours of Mr. Sydney Herbert and what safeguard there may be capable of acting as a preventative to any such disastrous repetition. The well-being of the future medical service will need the concurrence of the Treasury, the War Office including the Commander-in-Chief and the army generally, the medical headquarter staff and the profession, and it will be necessary for one and all to act in unison to bring the service up to the standard required by the times and to maintain it at that level. The *personnel* of the first three factors is changeable, the individuals come and go, and there is no guarantee that the necessary continuity of interest and action will be maintained; the profession and the general public may agitate to redress grievances and defects, yet it is not redress but prevention which must be sought for. What is required is some agency which, while recognising the value and necessity of a competent medical service to safeguard army efficiency, shall be generally and continuously operative and sufficiently powerful to influence the higher orders, and such a force, it seems to me, could be found in a sound public opinion in the military body alive from experience to the necessity of high professional ability for its well-being, individually and collectively. What I take it the army wants in its medical staff is, besides ordinary social, intellectual, and military qualities in its members, a good professional standard which can be relied on in times of sickness and injury to do all that medical and surgical knowledge suggest and to give sound advice, sanitary or otherwise, on all points touching the health and efficiency of the troops; and what is further required is the development of a right feeling of comradeship between the medical and other army sections, based on mutual respect, esteem, friendship, and interest, and which shall recognise in the medical service the friend and professional adviser of the army as a whole. From such a standpoint and on such a foundation the medical service might rest secure far beyond what Warrants and regulations can by themselves effect, and without such a basis of permanent stability one seeks in vain for the essentials necessary to maintain it in an active and progressive condition at all times—now and in the future. This necessary environment is non-existent and has to be generated, and what will go far towards producing it is, as

an initial step, getting the right stamp of medical man to join the service and, as a subsequent step, maintaining the body at a high professional and scientific level. Whether the present scheme as fully developed will tend to bring about these desiderata remains to be determined, but certainly the Warrant itself seems to fall short of the latter requisite. What the medical service requires to recognise is that its true *raison d'être* is professional and scientific in the major degree and in a minor degree military, and that it is on this basis, and this basis alone, that it can claim the assent of the whole army confraternity.

I am, Sirs, yours faithfully,

FRANCIS H. WELCH,
Surgeon-Colonel (retired), Medical Staff.

Brandram-road, Lee, April 5th, 1902.

150 ARTHROTOMIES.

To the Editors of THE LANCET.

SIRS,—Some six years have elapsed since I first invited attention to the value of arthrotomy with drainage in cases of traumatic hæmarthrosis and of traumatic arthritis and a year later I was induced to apply the same treatment to joint effusion in cases of rheumatic fever and gonorrhœal arthritis. The results have proved satisfactory beyond anticipation even in the latter maladies and I have been enabled from time to time to publish cases in THE LANCET and other journals showing the rapid and permanent effect which arthrotomy has on a rheumatic or gonorrhœal knee.

In all I have operated on 29 cases of blennorrhagic arthritis; 27 were restored to the normal condition and two were uncured; in the latter fibrous ankylosis had existed prior to operation. I do not intend again to break down old adhesions in this disease, for if a successful result is to be hoped for operation must be performed before the joint structures become pickled in the septic and plastic products of gonorrhœal infection. As far as my experience goes I am not cognisant of any other method of treatment which gives such uniformly good results.

88 arthrotomies have been performed for the malady commonly known as acute rheumatism, but which I have considered necessary to designate acute infective arthritis and cellulitis, for, as previously stated, the word "rheumatism" does not convey any explanation of the condition. In my first paper on this subject I maintained that it was an infective process, the germ or toxin gaining admission to the body *vid* the tonsil or other microbial trap-door, and recently bacteriological investigations tend to support a conclusion which I formed five years ago from the use of a knife. In this series 76 joints were restored to their normal state, all being acute or subacute cases with effusion; in the remaining 12 the disease had existed for months, and in some instances for years, before admission to hospital. Arthrotomy, breaking down old adhesions, irrigation and drainage seemed to give relief, but in none could *restitutio ad integrum* be said to have taken place. In my experience the knees, ankles, and wrists, in the order mentioned, bear the brunt of the attack, and I find that if the infective fluid is promptly removed by incision and free drainage is provided the constitutional symptoms promptly subside, the rapidity of cure being in direct ratio to the duration of the toxæmia. No difference of opinion exists nowadays as to the universal canon, "*Ubi pus ibi evacua*," and if the word "*pus*" signified all septic fluid there would be no necessity for this paper, but the inane part of the business is that unless the liquid presents one of the colours of the rainbow it is not considered worthy of surgical intervention. Yet the absurdity is most obviously apparent when one considers that in some of the most virulent cases of septic peritonitis we not infrequently find only a small quantity of dirty water, the same kind of flaky, tinted serum that I constantly remove from rheumatic joints, accompanied with symptoms of general toxæmia, at times almost pyæmic in character. I consider it a duty to drain these joints and by so doing to remove hotbeds of infection where the morbid material is incubated and prepared for distribution to the cardiac valves, the pericardium, and to other articulations. In order effectively to combat the insidious vagaries of this dreadful affection I strongly advocate removal of infective fluid from the joints as soon as it is detected. By this means cardiac and general metastasis can be avoided and the more I see of this disease the more convinced do I become that it has much in common with pyæmia and gonorrhœal arthritis.

15 arthrotomies have been performed for traumatic hæmarthrosis. Since 1896 I have operated on every case of hæmarthrosis which I have diagnosed with one result—prompt cure. At times the diagnosis is not easy, particularly when patients do not seek hospital treatment for some days after injury, and it has occurred to me on three occasions when operating as I supposed for traumatic serous effusion to find instead a collection of blood and clots. It is unnecessary to repeat my ideas elsewhere expressed as to the advantages derived from early operation in these cases further than to mention that in five minutes a surgeon can effect more than can be obtained by massage, &c., in five weeks (possibly months).

18 arthrotomies have been performed for acute traumatic arthritis, all the patients being cured. It has been my practice for some time past to resort to early operation in these cases, and generally, if rest, ice, and gentle massage do not bring about appreciable diminution of the effusion in one week, arthrotomy is performed, the joint is irrigated with warm salt lotion, and a drainage-tube is inserted for three days; by this means true physiological rest is provided for the injured structures and as a consequence rapid and permanent cure follows.

On only one occasion had I reason for any alarm on the ground of sepsis which happily was dispelled in 24 hours by a large stab counter opening and repeated irrigation with warm mercurial lotion, 1 in 1000. At the same time I wish to inculcate on any surgeon about to undertake an arthrotomy to make as certain of his cleanliness as if he were going to operate for the removal of an ovarian cyst. One amputation would be a huge discount on even 99 cures.—I am, Sirs, yours faithfully,

JOHN O'CONOR, M.A., M.D. Dub.,
Senior Medical Officer, British Hospital, Buenos Ayres.

THE MIDWIVES BILL.

To the Editors of THE LANCET.

SIRS,—It must be admitted that the dominant position in the healing art of the general practitioner must be jealously guarded from unreasonable encroachment by unauthorised claimants to popular favour. For what purpose do the Medical Acts exist if not to protect the public from ignorant and unreliable practitioners? The course of study for students in the medical profession is now extended from three years to five or six in order to obtain high-class practitioners in every department—men who are fully instructed in the many details and technicalities of a learned profession. We have thus an additional claim upon our legislators that they should defend the public from the *vox clamantis* of charlatans who trumpet their wares at every corner of the street. A midwife, if she understands her business, will, too often, like "the importunate widow," take very good care that every woman attended in her confinement shall hand her name on to some more wealthy neighbour or friend. Such persuasive garrulity a general practitioner with any self-respect would scorn to imitate.

In order to place the practice of midwifery before the public in its proper and judicial aspect we must not fail to recognise that it is as much a branch of the medical art as any other branch of medicine—take, for example, orthopædic surgery, dermatology, or gynæcology. Any one of these might be, and has been, practised under certain circumstances by intelligent women without any particular harm accruing to the patient, but this is no argument for registering the illegal practice of such women. The student of obstetrics knows well how many months and years of study are required before he can become proficient in the science and art of midwifery, acquiring that dexterity which is so needful an equipment for sudden emergencies. To delegate the same powers to a woman who at best is only qualified to attend a case of natural and normal labour requires careful consideration, so that she may promptly pass on the responsibility of a difficult case to a duly-qualified practitioner and may know when to do so with advantage. We are confronted with one of the most difficult problems connected with the registration of midwives—viz., who is there that can define the meaning of "natural labour"? If, for example, we take only the question of a natural presentation, what a multiplicity of dangers and complications threaten the viability of the child and the safe deliverance of the mother in such cases. The

village midwife engaged with a critical case suddenly discovers at midnight that she requires the aid of a duly-qualified practitioner. Who is there that will go to the town through sleet and snow to obtain the services of the expert? When he is found, is it right to expect that he will accept attendance upon the wife of a labouring man with no prospect of being recouped for his services? What will happen to the woman during the waiting hours?

It must, however, be admitted that these are not new difficulties. History records the fact that in all ages and in all countries woman has been called to the aid of her suffering sister in this her great peril. It is a modern refinement of cultivated society to obtain the services of a skilled practitioner with ready and ample resources for every emergency. No one will dispute the fact that this has been a great gain to the human race. The mortality statistics of the child-bearing period give ample evidence of the fact that human life has been preserved and suffering diminished by the skilful attendance of obstetric practitioners upon women during their confinements. We cannot, even if we so desired it, ostracise the midwife. She is a factor to be reckoned with. Over 200,000 women in this country are attended by midwives annually. Their services are secured by preference by the women themselves, and all that we demand as scientific practitioners is that this practice shall be regulated by such parliamentary measures as will protect the lives of those who are entrusted to their care. Therefore, when the Obstetrical Society comes in and offers to provide a qualifying examination for midwives so that they may practise their profession with some amount of skill and discretion, such humanitarian efforts for the amelioration of the lot of the necessitous poor must claim our acknowledgment. A woman thus brought into close association with the methods of practice adopted by the profession, and duly warned of the dangers which she is certain to encounter in her practice, should be the more ready to send and ask for the help of a neighbouring practitioner when any difficulty arises.

What we need to impress upon the Government is that if it determines to give a legal status to the practising midwife it becomes us to demand attention to the corresponding obligation—viz., that the safe delivery of a woman is only one part, and that a small part, of her obligations. The defence of the puerperal woman from the encroachment of septic germs, and the safe conduct of her case through the many shoals and dangers of the puerperal period can only be effectually guarded against by knowledge which the expert has acquired after years of study and research in the medical school. Hence the importance—I would say the necessity—of linking on every registered midwife with a qualified practitioner residing in the district where she works to whom she can have direct access in cases of difficulty or emergency.

I cannot understand why some general practitioners should object to the registration of midwives. Some kind of registration must precede any official regulation of their practice. Countless thousands of poor women have to submit to the ministration of these disqualified obstetricians on account of their poverty, yet the vast majority of them would gladly receive the services of an expert working upon trained scientific principles acquired after many years of hospital study. The manly fortitude and ready talent for sudden and grave emergencies, so characteristic of our race, will always make the man-midwife a *persona grata* with women of all grades. I do not think we need fear the ghost of supersession. We have got rid of Betsy Gamp from our hospitals. We have flooded our towns with trained nurses who have proved most valuable aids to our practice and useful watch-dogs over the foibles and fancies of our patients. Why stop short at the midwife? Are we not all advocates of antiseptic midwifery? Do we not agree that the puerperal state and the needful manipulation of lacerated tissues constitute a most fruitful source of germ infection by ignorant women? Are the lay public, many of whom are eagerly supporting the claims of the Midwives Society, aware of the dangers of employing women whose hands and clothing must be loaded with bacteria and septic germs as they hurry from house to house in densely populated neighbourhoods? Surely the remedy for all this loose and dangerous practice of self-constituted midwives is to place them under the authority of the medical officers of health, or of the local practitioner who should receive their reports, train them in habits of cleanliness and antiseptic treatment, and thus guard them from carrying infection from house to house, and also inhibit them from "attending cases of abnormal labour" except in consultation with a registered practitioner. Let us convince the House of Commons and the philanthropic public that in resisting this measure we are not contending for the right of guarding our own interests, but of safeguarding the public in populous centres from the ignorant and dangerous practice of unauthorised midwifery. A registered midwife with hospital training should prove a most valuable aid to our hard-working practitioners by reporting all cases of labour to the proper authorities and of the existence of epidemic disease in the houses they visit, receiving a small fee for so doing from the local authority.

Let it be clearly understood by the lay public that the medical profession do not object to the registration of midwives as such. The better instructed a woman becomes for the duties of her calling so much the better for the health of the community. But is it possible by an Act of Parliament to make a midwife an obstetric practitioner? However clever and skilful she may be it is impossible to qualify her for attending any but ordinary or natural labours under a certificate of three months' instruction in midwifery. As soon as the child is delivered and the placenta removed the woman passes into a puerperal condition the gravity of which can only be measured by a practitioner who has spent years in the study of obstetrics and gynæcology. The avenues for septic infection are numerous and intricate. The midwife may be skilful in the administration of an antiseptic douche but she cannot possibly know the source whence the bacterial infection has been communicated. She cannot explore with speculum and other appliances the manifold involutions of the vaginal or uterine membrane. She has no proper qualifications for testing the pulse or the temperature, or for examining the vital organs. The life of the woman depends upon prompt and skilful treatment of these emergencies. The statistics of lying-in hospitals show unmistakably that in confinements attended by duly-qualified medical men and women the mortality is much less than in those attended by midwives. If the Houses of Parliament determine to register duly-qualified midwives, well and good; but they must go one step further and provide medical attendance for that numerous class of cases that go wrong because the midwife is not competent to prescribe for, or treat, the complications of the puerperal state.

The only way to protect the public from incompetent and meddlesome midwives is to require the woman to be in direct communication with a local practitioner or medical officer of health for the treatment of all emergencies. This might be effected by requiring a notification certificate to be sent to the duly constituted authority of all cases attended by a midwife, with an additional request for assistance in case of emergency. The registrar or the relieving officer to give the required warrant for the attendance of the medical officer of the district when the emergency is communicated to him.

I am, Sirs, yours faithfully,

FREDERICK CHURCHILL,
Formerly Resident Medical Officer to the General Lying-in Hospital, Lambeth.

Cranley-gardens, S.W., April 4th, 1902.

THE TREATMENT OF SUPERFLUOUS HAIRS BY ELECTROLYSIS.

To the Editors of THE LANCET.

SIRS,—It need hardly be remarked that the removal of superfluous hairs from the face is of the utmost possible importance from a feminine point of view. The only really efficient method of obtaining that result is by electrolysis, notwithstanding all that has been written about the x rays—or, rather, exposure to the focus-tube—as a means of depilation. It is not too much to say that the presence of hair on the upper lip and chin may mar the whole life prospects of a woman. The condition, moreover, is extremely common—far more than is generally suspected even by observant medical men—as the feminine instinct prompts women to hide the defect as much as possible by the use of depilatories and by shaving. Notwithstanding these facts the operation of electrolysis has been allowed to drift away from the medical profession, in whose control it should most assuredly have remained, into the hands of unqualified persons.

The use of the focus-tube for epilation is not one that has yet stood the test of prolonged experience. The hairs admittedly return again and again, but it is contended that in the long run their power of reproduction is overcome

and no more hairs appear. On the other hand, unless the exposure to the x-ray tube is conducted by the most skilled and cautious operator the results may be disastrous. The writer has seen and recorded [1] cases in which obstinate ulcers of many months' duration have been thus produced on the chin. It seems more than likely that any unqualified person applying the x-ray tube in this manner and with such results would be liable to incur heavy damages in a court of law. Electrolysis, also, is essentially a surgical procedure, and as such should never have been allowed to pass out of the hands of the medical profession. Some day it is possible that the General Medical Council may recognise its duty to the profession in protecting its interests in this and other directions by pressing the amendment of the Medical Acts upon the attention of Parliament.

The combined method of depilation—namely, by use of the focus-tube to loosen the hairs and subsequent cauterisation of the empty follicle by the electrolysis needle—is, unfortunately, applicable only in cases where the growth of hair is coarse and scattered. That condition excludes at once the great majority of cases of hirsuties in which the growth is diffuse, thick, and coarse, or downy. In the latter class electrolysis is the only available means of scientific treatment. Depilatories merely palliate the evil for the time being, while in the long run they cause the growth of the hairs to be redoubled.

The objections to electrolysis are well known. It is tedious and painful, but both these obstacles are surmountable with a little determination on the part of the patient. There can be little doubt that all, or almost all, conceivable cases of hirsuties can be overcome in time if the resolution of the patient and the patience of the operator be sufficiently strong. A great deal of harm is done to the credit of the operation by the claims of unqualified persons who, as usual, seek to prove too much. They say, for instance, that the pain is trifling, that the destruction of the hair is certain, and that no mark is left. On the other hand, after some considerable experience the present writer is able to affirm that it is impossible to remove deep coarse hairs without a fair amount of pain and that some slight scarring must necessarily result. The truth of the latter statement will at once be apparent to all medical readers. As to recurrence, it is admitted by all medical writers upon electrolysis that re-growth of the hairs takes place in a fair percentage of the follicles operated upon, say, from 15 to 20 or 30 per cent. That result must necessarily follow from the varying direction of the hair follicle and bulb which runs now this way and now that and is sometimes bent on itself like the letter C. A second electrolysis of the young recurring hair is then likely to end in the complete destruction of the bulb. With the aid of a small battery and a most simple apparatus it is within the power of any medical practitioner to perform this little operation which would thereby be kept in the hands of the profession.

I am, Sirs, yours faithfully,

DAVID WALSH, M.D. Edin.

Grosvenor-street, W., April 7th, 1902.

A CASE OF GANGRENE OF BOTH NIPPLES IN THE PUERPERIUM.

To the Editors of THE LANCET.

SIRS,—With reference to Dr. Ralph Vincent's interesting notes in THE LANCET of April 5th, p. 962, I think that there is no doubt as to orthoform being the cause of both rash and gangrene. Several instances of the latter complication have been recorded. Professor Dubreuilh of Bordeaux has recently dealt with the subject of orthoform eruptions, including gangrene, in *La Presse Médicale*, No. 40, 1901, p. 233, also abstract in the *British Journal of Dermatology*, vol. xiii., 1901, p. 277. I am, Sirs, yours faithfully,

GEORGE PERNET.

Upper Gloucester place, N.W., April 7th, 1902.

THE STUDY OF THE HISTORY OF MEDICINE.

To the Editors of THE LANCET.

SIRS,—Under the above heading there is a letter in THE LANCET of March 8th, p. 696, from Mr. G. C. Peachey begging that the profession in England shall now begin to take some interest in the study of medical history. Though this study is not part of the curriculum of medical students it is essentially a post-graduate subject, and I am glad to say that I have introduced many English colleagues to the interesting works of Withington and of Puschmann, which latter has been so well translated into English by Dr. E. H. Hare. In this historical country it has always seemed to me a necessity that Egyptian students should know something of the medical history of their own country, and therefore I usually preface my course of lectures on medicine by telling them something of the medical history of Egypt. I suppose it is fair to say that the earliest known triumphs of the healing art were celebrated in Egypt, and everyone knows that the famous schools of Heliopolis and Memphis, where physicians taught side by side with priests, were within a few miles of modern Cairo. Herodotus in the fifth century B.C marvelled at the number of physicians in Egypt, and a little later Ptolemy I. allowed human dissection to take place for the first time in the world's history in Alexandria.

In the second century of our era Galen studied in Alexandria before he settled to practise in Rome, but about A.D. 500 the Christian doctors were driven out of Alexandria and settled in Persia, where they taught many Christians and the Arabs who for the next 500 years represented the highest form of medicine, and spread their knowledge over half the then known world, including Egypt, where they started hospitals, lunatic asylums, and a university. Later, in the eleventh and twelfth centuries, the torch of medical learning was again carried to Italy by the Arabs, and Arabic medicine was soon transmitted *viâ* Bologna and Padua to England and Germany. During the last 20 years English and German physicians have been restoring to Cairo and Alexandria the modern fruits of that knowledge which was for so many years almost a monopoly in Egypt. I sincerely hope that one of the many existing British societies may feel inclined to popularise within our profession the history of medical teaching. I am, Sirs, yours faithfully,

Cairo, March 29th, 1902. F. M. SANDWITH.

ADMINISTRATION OF STRYCHNINE FOR CARDIAC FAILURE DURING AND AFTER SEVERE OPERATIONS.

To the Editors of THE LANCET.

SIRS,—Anyone who is in the habit of reading current medical literature can hardly fail to notice the frequency with which strychnine is administered for cardiac failure taking place during or after a severe operation. The usual method apparently is to give five minims of the liquor either by the mouth or subcutaneously, to repeat this dose once or twice, with the utmost caution, at varying intervals, and then to stop its administration, apparently from fear of poisoning the patient. The following instances are in marked contrast to this method.

1. A woman, aged 39 years, was anæsthetised by me with nitrous oxide and ether for the operation of pylorectomy. The operation lasted two and a quarter hours, the anæsthesia being maintained throughout with ether administered from a Clover inhaler without the bag. Three-quarters of an hour from the commencement saline solution was injected intravenously to the amount of three pints, to which were added one ounce of brandy and 20 minims of liquor strychninæ. Halfway through the operation the patient's condition became so bad, the respiration being shallow and the pulse very weak (its rate about 160), that it was very doubtful whether she would be alive at its completion. During the last hour I injected 30 minims of liquor strychninæ in doses of 10 minims into the substance of the greater pectoral muscles, producing decided improvement in the volume of the pulse. Oxygen was also administered towards the close of the operation when the peritoneal cavity was filled with hot saline solution. The patient lived. During the last hour and a half 50 minims of liquor strychninæ were given without producing the slightest twitching.

2. I have published a case [1] in which, after I had performed colostomy of the transverse colon for pelvic cancer in a woman, aged 64 years, the patient was kept alive by doses of liquor strychninæ (five minims) every four hours, at first sub cutem and later per os, with the important addition of extra doses of strychnine every time the pulse began to

[1] The Röntgen Rays in Medical Work. Third edition. London, 1902 p. 214.

[1] Brit. Med. Jour., April 29th, 1900, p. 1024.

intermit, which occurred several times during the first 48 hours. This patient had 1865 minims of the liquor in 64 days without the slightest symptom of poisoning but with marked benefit to her heart.

3. I have recently anæsthetised a man, aged 30 years, suffering from tuberculous peritonitis for which cœliotomy was performed, the lungs being also affected. Chloroform was given in preference to ether because of the lung affection. The anæsthesia lasted one hour, at the end of which his pulse became very feeble, almost running, the rate being about 190. I injected 20 minims of liquor strychninæ into the substance of the left pectoralis major; in about seven minutes the pulse improved considerably in strength with its rate reduced to 120. No symptoms of poisoning resulted.

4. Mr. B. G. A. Moynihan[1] has recorded a case of double primary amputation, on the right side at the hip-joint, on the left side in the middle of the thigh, in which 45 minims of liquor strychninæ were given hypodermically in three-quarters of an hour, producing good stimulation but no symptom of poisoning.

From the above and other similar cases it is evident that strychnine may be administered to combat cardiac failure in doses much larger and more frequent than is usually considered safe. Patients in a state of collapse stand these larger doses well, their administration causing marked improvement in the pulse, usually without any twitching. Even where some twitching occurs it is of comparatively little importance. It is of little use to inject strychnine under the skin of an extremity in a pulseless patient, the circulation of the part in such a case being almost non-existent. It is quite possible by making frequently repeated subcutaneous injections of strychnine into the extremity of a pulseless patient to cause convulsions, because, if the patient's circulation improves—as, for instance, after intravenous injection of saline solution—the strychnine which has accumulated in the subcutaneous tissues is rapidly absorbed owing to the improved circulation, the patient getting within a short space of time the whole amount of the hypodermic injections. The ideal method of introducing strychnine into the general circulation is to give it with the saline solution when intravenous infusion is being performed. I have had no experience of injecting undiluted liquor strychninæ into a vein. A useful place for injection is the pectoralis major, the drug being injected into the substance of the muscle. This site has the additional advantage that if artificial respiration is being performed the drug is massaged into the circulation. It is not enough to order a patient with a feeble intermittent heart so much strychnine at regular intervals—for instance, every four hours; his heart may stop long before the time for the next dose comes round. For my more severe operation cases I am in the habit of instructing the nurse to inject, in addition to the four-hourly dose, five minims of the liquor into the substance of the pectoralis major every time the pulse becomes weak and to repeat this dose of five minims every 10 minutes until either the pulse improves or general, not slight local, twitching occurs. I prefer a twitching to a pulseless patient—from the first condition recovery is probable, from the second it is not.

am, Sirs, yours faithfully,

Plymouth, April 7th. C. HAMILTON WHITEFORD.

SOUTH AFRICAN CIVIL SURGEONS' DINNER.

To the Editors of THE LANCET.

SIRS,—The second annual dinner of South African civil surgeons will be held at the Hotel Cecil on Monday, June 9th, at 7.30 P.M. Sir Frederick Treves, K.C.V.O., will take the chair. The price of tickets will be half a guinea. On account of the difficulty of obtaining the names and addresses of civil surgeons who have returned from the war, we hope that all who intend to be present will communicate with us as soon as possible and urge others to do the same. Arrangements are being made, as last year, to seat 200.

We are, Sirs, yours faithfully,
C. GORDON WATSON,
FRANCIS E. FREMANTLE, } Hon. Secs.

39, Moore-street, Lennox-gardens, S.W., April 8th, 1902.

[1] THE LANCET, Dec. 14th, 1901, p. 1658.

AN APPEAL TO MEDICAL FREEMASONS.

To the Editors of THE LANCET.

SIRS,—May I through the medium of your columns appeal to members of the medical profession who are Freemasons for their assistance in the case of my husband, Arthur Somers Ivens, a candidate for the approaching election to the Royal Masonic Benevolent Institution? My husband practised as a surgeon at Thorpe-le-Soken, Essex, for 21 years, but is now, through loss of eyesight and memory consecutive on a severe attack of influenza, an invalid for life and quite unable to follow his profession. He and I are left entirely on friends for support. My husband was initiated in the Arnold Lodge, No. 1799, Walton-on-Naze, on March 4th, 1880, and subscribed until March, 1900. Votes will be thankfully received by

Yours faithfully,

Bildeston, Suffolk. CLARA SOMERS IVENS.

*** We understand that this is the only medical case at the approaching election.—ED. L.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

The Development of the Plague Epidemic.—The Continued Famine.—The Health Officer of Bombay.—Administrative Changes.

THE figures for this week possess several points of interest. First, there is the increased total of plague mortality throughout India from 23,715 to 25,655, chiefly occasioned by the intensity of the disease in the Punjab where 15,090 deaths were recorded, as against 12,544 for the previous seven days. Then the fresh outbreak at such important centres as Delhi and Lahore has to be recorded. Thirdly, the abortive development of the recrudescence in Calcutta and Bengal is to be noticed. In 1901 the plague mortality in Bengal from the first week in February to the second week in March rose from 2200 to 7569, while this year the rise has been from 882 to 1234. Much the same proportionate figures apply to Calcutta. It is evident, therefore, that some epidemic influence is at work inhibiting the development of the outbreak in this particular province. The improved position can hardly be ascribed to the sanitary measures adopted. In other parts of India there is little change. The Madras Presidency returns 361 deaths as against 289, Bombay Presidency 4779 as against 4806, Bombay city 856 as against 888, and Calcutta 501 as against 462. In Karachi the deaths have risen to 82. On the other hand, the outbreak in Poona seems to have run its course. The Bengal Presidency returns 1289 deaths, the North-West Provinces and Oudh—now called the United Provinces—2335, the Mysore State 304, and the Hyderabad State 113. Plague hospitals would seem to be almost things of the past. Very few cases go to the hospitals in Calcutta and on March 11th there were only 181 cases in all the hospitals in Bombay. It may be said that patients are now permitted to die in their own homes. Inoculation is being pushed in some places but is totally neglected in others. For the week ending March 14th 44,179 doses of vaccine were sent out from the laboratory in Bombay.

The famine continues to increase rather than to diminish. On March 10th there were 400,000 persons under relief, chiefly in the Bombay districts, Rajputana, and Central India.

I am glad to be able to record that the services of Dr. J. A. Turner, health officer of Bombay, have met with due appreciation and that his salary has been raised to Rs. 1600 per mensem. In due course it is to be hoped that he will receive the full amount of Rs. 2000 permitted by law.

The following changes will be made in the distribution of military medical administration in India from April 1st. 1. A lieutenant-colonel of the Indian Medical Service will be appointed as principal medical officer of the Derajat district. 2. The appointment of principal medical officer of the Mandalay district, now held by a colonel in the Royal Army Medical Corps, will be abolished. The administrative medical charge embracing Rangoon and the Southern Shan States will be extended to the whole of Burma and the chief appointment will be held alternately by an officer of the Royal Army Medical Corps and one of the Indian Medical

Service, with headquarters at Rangoon. 3. The appointment of principal medical officer of the Peshawar district will be reserved for a lieutenant-colonel of the Royal Army Medical Corps.

March 22nd.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

The Ear and Throat Hospital.

THE annual meeting of the friends of, and subscribers to, this institution was held on March 18th, when the fifty-seventh annual report was read. It was stated that the expenditure had increased by £214 odd as compared with the previous year. The number of new out-patients was 4315, the total number being 7002. 331 in-patients had been admitted during the year. It was stated that the King had consented to become patron of the hospital. Increased accommodation both for patients and for nurses was stated to be imperatively demanded if the present good work is to continue.

Notification of Infectious Diseases.

A notice has been issued by the Health Committee of the City Council stating that in future chicken-pox is to be notified under the Infectious Diseases Act. This will include a large number of cases, as at present chicken-pox is prevalent in the city. Fortunately, no additional cases of small-pox have been notified and as at times it is difficult to differentiate these two diseases in their early stages the precaution of the Health Committee must be looked upon as a wise and well-intentioned regulation.

The Housing Question.

The ever-present discussions upon this momentous subject still wage with ardour in our midst. A site has been secured for the development of a Rowton House and plans have been drawn up which promise to bring to a satisfactory issue the development of this scheme. Meanwhile it is asserted that this project will only touch the fringe of the question and that the great residuum is still unprovided for by town council or private enterprise. The respective parties interested, more especially minor landlords and philanthropists, present very different views on the matter.

April 8th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Health of the City.

As recorded in THE LANCET of March 29th, p. 924, the jubilee of the Manchester and Salford Sanitary Association is to be held in about a fortnight. The last annual report shows that with comparatively small means the association continues to do valuable work which could scarcely be undertaken by the corporation and certainly not by unorganised private effort. Without being antagonistic to the corporation—and, indeed, working amicably with it for the same ends—it can bring influence to bear which not infrequently aids the city council in coming to a wise decision on questions of sanitation. Last year, for example, plans were drawn up for building working-class houses by the corporation but in several respects they were faulty and the Sanitary Association and an organisation called the Citizens' Committee succeeded in getting improved plans adopted. The questions of how to bring the advantages of public laundries within reach of the poor and of the formation of a local society for the prevention of consumption are engaging the attention of the association. It continues its efforts to protect the public from the dangers arising from the fumes from chemical works and from the discharge of explosive and poisonous waste products into the sewers. Deputations have been sent to the school boards of Manchester and Salford to advocate the teaching of hygiene and work has been done in various other directions. In one thing there has been failure—namely, in convincing the corporation of the need of cottage baths in the crowded parts of the city. The Baths Committee of the corporation more than 12 months since said that they had the matter under consideration, and it appears to be under consideration still. As the Lord Mayor presided at the annual meeting and promised to talk over the question with the chairman of the Baths Committee perhaps there may be some hope of this boon to poor women being granted. The association also endeavours to spread the knowledge of sanitary matters by lectures and by the publication of tracts and leaflets. It may perhaps have been noted that the Congress of the Sanitary Institute is to be held in Manchester in September next, so that the question of the public health will be brought with unusual prominence this year before the people of Manchester.

Meeting-place for Scientific Societies.

Manchester has long suffered from the want of a central meeting-place and library for its various scientific societies. The Literary and Philosophical Society, the oldest and as regards its history the most distinguished of them, is fortunate in having its own domicile but it cannot accommodate all the others. A meeting was held in the Town Hall on April 3rd to consider the question. In the unavoidable absence of the Lord Mayor Mr. Alfred Darbyshire presided. Members of the following societies were present: the Geographical Society, the Association of Engineers, the Section of the Institution of Electrical Engineers, the Chemical Club, the Medical Society, the Pathological Society, the Clinical Society, the Microscopical Society, the Society of Architects, the Amateur Photographic Society, the Geological Society, the Field Club, and the Society of Chemical Industry. At present these 13 societies, as one of the speakers remarked, "have to meet in some hired room, usually in an hotel, and speaking from experience this was not at all satisfactory and did not tend to promote the dignity of the meetings." The various medical societies have long felt this state of things as a great inconvenience and attempts have been made more than once to obtain more suitable quarters but the cost has been found to be prohibitive. The Medical Society at present is accommodated at Owens College, in the rooms of which its library of 26,000 volumes is lodged, but the requirements of the college as to space are continually growing and this arrangement cannot be looked upon as permanent. Dr. T. Harris (Medical Society) moved that a committee should be formed, with power to add to its number, to consider the question of a central meeting place and to prepare a scheme or schemes. This was carried and it may be hoped that by coöperation the societies will succeed in accomplishing what they cannot do singly.

The Medical Inspection of Schools.

Dr. Arnold W. W. Lea has drawn attention in the local papers to the great need there is in Manchester and Salford for more thorough medical inspection of public elementary schools and of the scholars. The Salford School Board appointed a medical officer some years ago and the Manchester School Board has recently decided to do so. Attendance at school being compulsory it is only just that the school authorities should see that the health of the children does not suffer and that they should, as far as possible, be protected "from the infectious and loathsome diseases so prevalent in schools." The London School Board by means of elaborate instructions and pamphlets hopes that the teachers may become sufficiently skilled, and that they will be on the alert, "to detect disease among the children." But, as Dr. Lea says, this "can really form no part of a teacher's work and is of comparatively little value." Much the same may be said of the appointment of nurses as adopted in some schools and approved apparently by the Board of Education "to detect and treat diseases, though it admits that for this purpose they would require special skill and instruction." This would seem to be adding another class of "inferior," but no doubt "certificated," practitioners who by degrees seem to be ousting the unhappy general practitioner. In Manchester there are about "40,000 children daily attending elementary schools" and it is impossible for one man to supervise the hygienic conditions and the health of the children, even if the whole of his time were devoted to the work, which, it is stated, is not expected. Dr. Lea says that in America the medical supervision is very completely carried out, though most European countries seem to have done more than we have in this direction. In Boston, U.S.A., a medical officer attends each school every morning between 9 and 10 A.M. He sees all children observed by the teachers to be ailing or whose parents wish for an examination. If the child is not fit to be at school a card telling the nature of the complaint and advising as to the steps to be taken is sent to the parents. The inspector does not undertake the

treatment which must be carried out through the parents. The child is again inspected before being allowed to return to school. The same system is carried out in many other cities. "The expense of such a system would be by no means great and would be more than balanced by (1) a diminution in the number of cases of infectious disease; (2) increased school attendance; and (3) improved health of the children." The Manchester School Board estimates that through measles alone the elementary schools of Manchester lose £2000 per annum. In view of the acknowledged rapid "physical deterioration of the youth of our great cities" it is of high importance to neglect no means of checking what is already a national peril.

Poisoning by Mond Gas.

An inquest was held at Leeds on April 3rd on the body of a man who was found unconscious, face downwards, on a pipe conveying Mond gas. Artificial respiration was tried to no purpose. It was thought that in repairing a leak in the pipe he "had slipped and, knocking his head against one of the pipes, had become unconscious" and so had inhaled the gas. Mr. F. W. Halliday, the surgeon who was called in, said that he was satisfied that death was due to carbon monoxide poisoning. Shortly after the accident it was found that one sample contained 10·2 and another 12·6 per cent. of the monoxide. One point tending to the prevention of accidents is that the smell is said to be "awful" and can be detected 30 yards away. This is due to the tarry matter in the coal. The managing director of the works said that the gas was not dangerous to the public or to the workmen "with ordinary care" and, the coroner agreeing with him, the jury returned a verdict of "Accidental death." It is obvious, however, that leakage of the gas should be carefully guarded against, first, because of its large percentage of carbon monoxide, and secondly, because it would be a serious nuisance.

Barrow Hospital Inquiry.

His Honour Judge Parry held an inquiry on April 5th at Barrow concerning complaints of delay in the treatment of patients at the hospital. As his report has not yet been given it is undesirable to comment on the case, but it seems to turn very much on whether the one house surgeon of the hospital can be always on duty.

April 8th.

NORTHERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENT.)

Memorial to a Northumberland Volunteer.

ON Saturday, April 5th, in North Gosforth Cemetery, Sir George Hare Philipson unveiled a monument erected in memory of the late Dr. W. L. Walker, of Seaton Burn, Northumberland, who was killed in action at Modderfontein, South Africa, on Jan. 31st, 1901, whilst endeavouring to save a comrade. The monument, which is of grey polished granite and about 10 feet in height, is surmounted by a red granite Latin cross. On the base is the following inscription:

In memory of William Longstaff W. Walker, M.D., B.S. (Durham), of Seaton Burn, civil surgeon, 2nd South Wales Borderers. Killed in action at Modderfontein, Transvaal, South Africa, January 31st, 1901. Aged 26 years. For his country. Erected by friends of Seaton Burn and Dinnington Collieries and District.

Sir George Hare Philipson spoke of the brilliant career of the deceased as a student at Durham College of Medicine, Newcastle, as well as of his late valuable work in the Royal Infirmary and the Dispensary, Newcastle. Dr. Walker, he said, won the esteem of all with whom he was there brought into contact. Animated by a desire to serve his Queen and country, when the war in South Africa broke out he volunteered, along with his brother Allan, for active service and in the year 1900 he was sent out as a civil surgeon with the 2nd South Wales Borderers. He proved an active and gallant volunteer and took a full share in the operations at Bloemfontein, Krugersdorp, Magersfontein, and Modderfontein. On Jan. 31st, 1901, whilst endeavouring to save an orderly, he received a wound which speedily proved fatal. That heroic act was but a sample of the self-sacrifice which constituted a prominent feature of his noble character. His bravery was conspicuous everywhere and even the Boer commanders bore testimony to his gallantry in the field. Though his body had been laid to rest on a kopje with the remains of the orderly whose life he had endeavoured to save they believed his soul was now with his Maker. The beautiful memorial bore silent but eloquent testimony to the regard which they all felt for his memory.

Death of James M. Fraser, M.B., C.M. Edin., Coxhoe, Co. Durham.

Dr. J. M. Fraser died at the Davy Lamp Surgery on April 3rd, where he acted as assistant to Dr. W. A. Hepburn of Coxhoe. It appears that at about 2 P.M. on that day he told his housekeeper that he was going to lie down, as he was tired, and he asked her to awaken him at about 6 o'clock. She went to awaken him at that time but could not do so. She then sent immediately for Dr. Hepburn, who when he arrived did everything possible for him but without avail. An inquest was held two days later and the jury returned the following verdict: "Death from the effects of an overdose of morphia, but whether taken intentionally or otherwise we are unable to decide."

Durham University Convocation.

A Convocation will be held in the library of the College of Medicine, Newcastle-upon-Tyne, on Saturday, April 26th, at which it is proposed to confer the honorary degree of D.C.L. on Sir William Selby Church, Bart., President of the Royal College of Physicians of London, and Professor Thomas Annandale, Regius Professor of Clinical Surgery in Edinburgh University.

Small-pox.

Cases of small-pox have now been occurring in this district for the last two months but with two or three exceptions the infected area has been confined to North and South Shields. The number of cases in North Shields since the outbreak is 42, while there are at present 13 cases in the hospital at South Shields. A meeting of the health committee of Durham County Council was held in the Shire Hall, Durham, on April 7th, to consider the question of isolation accommodation in the county in view of the possible increase of the disease during the summer months.

Newcastle-on-Tyne, April 8th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Typhoid Fever in Brecknockshire.

DURING the past 30 years the population of the rural district of Crickhowell has fallen from 8514 to 7116 and for a great portion of the same period typhoid fever has been endemic in the district. In the year 1883 the then medical officer of health stated that with regard to one locality "newcomers usually have the disease during the first year of their residence there." Last year among a group of some 200 houses 40 cases were reported and as the infection was attributed by the medical officer of health (Mr. P. E. Hill) to the pollution of springs supplying water to the houses affected an inspection of the locality was made in September last on behalf of the Local Government Board and the report of the inspectors, Dr. R. J. Reece and Mr. Sandford Fawcett, A.M.I.C.E., has now been published. This report discloses a most unsatisfactory condition in the rural district, where springs used as domestic water-supplies are not only contaminated with cesspools and slop drains but also from the leaking pipes of a length of sewer which carries sewage from the adjoining urban district of Brynmawr. After detailing certain recommendations the writers of the report go on to say: "What is brought home to us in our inquiry is the fact that if the rural district council had carried out the recommendations first made to them in 1872 by Dr. Gwynne Harries (an inspector of the Local Government Board) many deaths and much suffering would in all probability have been prevented."

Small-pox.

During the week ending April 5th there were seven fresh cases of small-pox in Swansea, all the patients being men, and it is probable that they were infected from the same source. There are three cases of small-pox in the county of Hereford. One patient is a man who had tramped from London; the other two are children who have presumably been infected from some tramp or other person passing through the district.

The Examination of Children's Teeth.

A committee of the Cardiff Board of Guardians recently had before it a communication from the honorary secretary of the South Wales Branch of the British Dental Association in which the importance of a regular examination of the teeth of the children under the committee's charge was urged. According to the report in the local newspapers the communication was received with "bursts of ironical laughter." If this reception is a measure of the manner in which the pauper children of Cardiff are cared for in other respects it is exceedingly probable that a large number will become, and will remain, pauper men and women. The members of the committee appear to forget that as regards the children under their care they are *in loco parentis* and at the present time a parent who has any regard for the comfort and future welfare of his children recognises that a regular visit to the dentist is as essential as the provision of suitable food or of seasonable clothing.

The Manufacture of Ice-cream.

The health committee of the Bristol Corporation has been considering the expediency of obtaining local powers for the more effective control of ice-cream manufactories within the city, and has recommended that in the next Bill promoted by the corporation certain powers should be inserted with this end in view. The provisions suggested by the committee are that every maker of, or dealer in, ice-cream shall give immediate notice to the medical officer of health of any outbreak of infectious disease amongst the persons employed in the business and that no persons shall be employed in the manufacture or sale of ice-cream while he is suffering from diarrhœa, typhoid fever, scarlet fever, diphtheria, or other infectious disease or from any infectious skin disease. Further suggestions are that ice-cream shall not be made in a room in which there is any inlet or opening to a drain, in a room used as a living or sleeping room, or which communicates directly with a privy or ashpit, or where the articles used in the manufacture are likely to be contaminated. The frequent washing or scalding of utensils used in the process of manufacture, the lime-washing of walls and ceilings twice yearly, and the washing of floors once a week are provided for, and, finally, the use of ice from ponds, canals, or streams in the neighbourhood of the city is prohibited.

April 7th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Curious Defence for Poor Milk.

AT the Belfast Police-court on April 7th two men were summoned for selling milk which was 13·3 per cent. deficient in normal fats. The defence was that the milk was sold as it came from the cow at the end of February in cold snowy weather and that there were times, especially in the winter, when through cold or change from one temperature to another there might be a falling-off in fats. In such circumstances the animal itself had to fall back to a slight extent upon the fats which were in its composition for the purpose of keeping up the heat and that might be a reason for the falling-off in the fat and for the alteration in the character of the milk. It was stated that there had been a decision in England in which the magistrates held that though the milk was pure milk it was of bad quality and that they had fined the defendant but that on appeal to the King's Bench Division it was held that the conviction could not stand. In order that the decision might be looked up the case was adjourned for two weeks.

The Royal Commission on University Education in Ireland.

This Commission met in Belfast last week and held two sittings (morning and afternoon) on April 2nd, 3rd, and 4th, and a morning session on the 5th—that is, altogether the members of the Royal Commission have devoted three and a half days to Belfast. During this time they examined or, to be more accurate, they heard (for of any real attempt at examination there was almost none) written statements from 32 different witnesses, dined one evening at Queen's College with the professors, and attended an afternoon reception on the 4th at the house of the President of Queen's College. Among members of the medical profession the following gave evidence: Professor J. Symington, Professor J. W. Byers, Professor J. A. Lindsay, Professor T. Sinclair, Dr. A. Dempsey, Dr. W. Calwell (honorary secretary to the medical and surgical staff of the Royal Victoria Hospital), and Dr. R. W. Leslie (secretary of the Royal University Graduates Association). The chairman (the Right Hon. Lord Robertson) was most courteous and showed himself determined to give everyone a full hearing; but, writing quite candidly, I may say that public opinion in Belfast and the north of Ireland has not been reassured by the circumstance, so little concealed, that little or no attempt should have been made, as was done in other places, to question the witnesses. The Commissioners, rightly or wrongly, have given the impression to the public, conveyed probably through the witnesses, that their desire was to get through work as rapidly and as civilly as possible, that they had already heard enough evidence, and that their minds were made up. The result is that public opinion in Belfast, which has always been hostile to the Commission from the fact that there was not a single member appointed on it who was regarded as holding the views of the majority of the Belfast people, has become more antagonistic, and the statement made in one of the local papers that the evidence of Mr. F. Hugh O'Donnell and also that of Professor Hartley and Professor O'Reilly (of the Dublin College of Science) has been refused has not tended to improve matters. There may be clear and definite reasons for the exclusion of these witnesses, but after their public declaration on the matter the Commission should give some explanation on the subject. The evidence will not be printed for some time, but the features of it specially canvassed are the statement of the President of Queen's College that he wished that institution to be a university in everything but in name, the extraordinary revelations in reference to the working of the Royal University in its relation to the Belfast medical school, the strongly expressed views advocating a complete reform in the government of the Queen's College, Belfast, the divergence of views as to the settlement of the question of university education in Ireland, the strong case made out for a women's college in Belfast, the claims of the Belfast and Ulster Roman Catholics to be consulted in the settlement, and the views of the graduates. The Commissioners met at Magee College, Londonderry, on April 7th, and heard two witnesses, and on April 8th, in the afternoon, they met at Galway. They will now go to Cork, and it is said that later they will hear, at their concluding session in Dublin, some more witnesses, after which it is believed they will try to come to some decision on this vexed question.

The late Michael M'Donnell, M.R.C.S. Eng., J.P., of Belfast.

I regret to announce the death of Mr. M. M'Donnell, a most highly respected and greatly beloved medical man, at his residence in Belfast on April 3rd. For a long time Mr. M'Donnell practised in Randalstown, where he was certifying factory surgeon and medical attendant to the Royal Irish Constabulary. He obtained the Membership of the Royal College of Surgeons of England in 1847 and was one of the senior medical practitioners of the North of Ireland. A short time ago he gave up the active duties of his profession and came to reside in Belfast, where his son is in practice.

Training of Nurses in Lurgan Workhouse.

At a meeting of the Lurgan Board of Guardians on April 3rd it was decided to adopt the recommendations of the committee of the infirmary who had advised that the salary of Dr. J. S. Darling, the visiting medical officer of the workhouse, should be increased by £25 per annum, that the nursing staff of the establishment should consist of four charge nurses and eight probationers, and that probationers should be employed for two instead of three years as proposed, and that the only salary paid to probationers should be £6 for the second year. The result of this decision is that Lurgan will be accepted as a training-school for nurses.

April 7th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Insanity of Dr. Boileux.

SOME six years ago Dr. Boileux and Dr. de la Jarrige were convicted of procuring criminal abortion and were sentenced to five years' imprisonment. They were released on completing half their sentence. At the time of the trial many persons believed that a gross miscarriage of justice

had taken place. The facts were as follows. Dr. Boileux curetted the uterus of a woman who had been sent to him by his colleague, Dr. de la Jarrige, with a diagnosis of metritis. In the course of the operation Dr. Boileux found that the woman was pregnant. However, he went on with the curetting and finally perforated the uterus. This set up peritonitis from which the woman died despite a laparotomy being performed. The circumstances attending the operation were somewhat mysterious. Dr. Bolieux did not operate on the patient in his private hospital but in his own private house, making her go to bed in his own room. Some correspondence between the lover of the woman and Dr. de la Jarrige, which was seized, showed that the latter at least knew perfectly well that his patient was pregnant. The lover committed suicide at the beginning of the trial. It was never clearly established that Dr. Boileux knew of the pregnancy and it is quite possible that he was led into error by trusting to the diagnosis of Dr. de la Jarrige. Once out of prison the unhappy Dr. Boileux led a miserable existence. After trying to get a living as assistant to a surgical instrument-maker and then as secretary to a medical man he tried to recommence practice, incited thereto by some of his friends who believed in his innocence. But his name was enough and he got no patients. Some few days ago he became furiously maniacal and going into a restaurant commenced to smash everything that he could lay his hands on. The unhappy man is now in a lunatic asylum.

Raw Vegetables and Sewage.

M. Baudin, Minister of Public Works, is much exercised at the effects which fruits and vegetables which have been watered with sewage may have on the public health of Paris when they are eaten raw. He has therefore written a letter to the President of the Council proposing that measures should be taken to obviate this risk and pointing out that there is every reason to fear that fruits and vegetables contaminated by sewage efflux which has been insufficiently purified arrive at the markets infected with microbes and organic débris. The water used for irrigation distributes the pathogenic organisms and boiling makes these harmless. Cooked vegetables and fruits which are peeled before being eaten are therefore free from risk, but it is very far from being the same with vegetables and fruits which are eaten raw, such as salads and strawberries. M. Baudin only sees one way of obviating this risk and that is to have a clause in the contracts between the Paris authorities and the users of sewage for cultivation forbidding the latter to use sewage for fruits and vegetables intended to be eaten raw. In accordance with this proposal the Consultation Committee of Public Health nominated a sub-committee which has decided that such a clause shall be inserted in forthcoming contracts.

The Diagnosis of the Nature of Blood-stains.

At the meeting of the Academy of Medicine held on March 25th M. Linossier and M. Lemoine gave an interesting account of the present methods of diagnosing the origin of a blood-stain. Until quite lately the expert could only say with certainty that the stain gave corpuscles which were nucleated and elliptical as in birds or discoidal as in mammals (except the camel) and occasionally in very favourable specimens he could differentiate human globules from the very small ones of the musk deer, but no difference could be certainly ascertained between the globules of man and those of the dog or of the rabbit. Experts in forensic medicine have therefore taken great interest in the method newly proposed by Uhlenluth, founded on the serum precipitation process of Tschistovitch and Bordet. The method is as follows. A rabbit is given gradually increasing doses of human serum which is toxic for the rabbit. After a certain time the rabbit becomes immune and then the serum of its own blood when brought into contact with human blood gives under the microscope a characteristic precipitate. If then a number of prepared rabbits were kept in readiness the expert would be able, it was claimed, to recognise whether a blood-stain is human or not. However, other observers contested this statement and said that the blood of other mammals besides man gave a similar precipitate. Thus confusion arose which made the method of little value. In their communication of March 25th M. Linossier and M. Lemoine showed that the method could be rendered accurate by taking the precaution to use serum diluted with water. Rabbit's serum in a strength of 1 in 1000 always gave a precipitate with human blood but not with that of another animal.

The Overcrowding of the Paris Hospitals.

During the winter and the early spring the Paris hospitals are much overcrowded and in order to overcome this difficulty the Director of the Assistance Publique caused notices to be posted in all the out-patient rooms to the effect that the Paris hospitals existed for the use of the inhabitants of Paris only. However, of course, if a patient shivering with fever presented himself for admission the physician in charge had to take him in. The director of the Assistance Publique has now come to a decision which it is hoped will have the result of relieving the overcrowding. All patients who are so far advanced in convalescence as not to need constant care will be transferred to their own homes. There they will still be provided with medical attendance and medicines free of charge and they will besides be allowed a sum of one franc per diem for the space of one month, which term may be extended to three months on a certificate signed by the medical attendant. This new rule will not, of course, be strictly enforced except in the case of those who have a fairly good home and some relation capable of looking after them.

April 8th.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

A New Water-supply for Zürich.

AT present the town of Zürich has a double water-supply. Water for household purposes derived from the lake, properly filtered in double sand filters, flows into almost every house in the town and amply provides for purposes of street-cleaning, &c. It is for the most part bacteriologically so pure that a majority of the population use it for drinking purposes, though about 200 public fountains supply pure and fresh water derived from springs (*Quellen*) situated in the forests above the town. During the 15 years from 1885 to 1900 the population increased greatly and it now amounts to 150,000. A daily supply of 45,000 cubic metres (9,900,000 gallons) is therefore required instead of 25,000 cubic metres (5,500,000 gallons) as before. The municipality has been fortunate enough to secure by purchase a number of springs situated in the Sihl and Lorze valleys, some 15 miles from the town at an altitude of 552 metres. This water, which is bacteriologically of the purest kind, is carried round the town through a circular system of pipes from which branches will eventually supply 200 new fountains to be erected in suitable situations throughout the city. The total quantity of water available amounts to 23,000 cubic metres (5,060,000 gallons) per diem, thus securing an ample supply of the best and purest drinking-water for Zürich for a long course of years. Running water was deemed essential by the hygienists consulted (Professor Oscar Wyss and Professor Roth) as ensuring purity. The town will spend a sum of 3,200,000 francs (£128,000) to complete the work. The aqueduct is already made, 7500 cubic metres (1,650,000 gallons) of water are already available, and the rest of the fountains will be built at intervals in the course of the next three years.

Medical Students at Swiss Universities.

The total number of medical students inscribed for the winter term of 1901–1902 amounted to 1493. The special feature at present is the progressive increase of foreign female students, which is so rapid that the men will in two or three years' time be in the minority. There were 665 women and 828 men. Only 600 students (580 male and 20 female) were Swiss and the rest (893) were foreigners of whom 645 women. The number of students at the different universities was as follows: Basle, 147; Lausanne, 202; Zürich, 291; Geneva, 396; and Bern, 457. There were only five female students at Basle; the ladies have a great preference for Bern, where they number 283 and leave the men in a minority of 174.

Zürich, April 4th.

PROTECTION FOR FOOTBALL PLAYERS. — An American inventor has patented a "head harness for football players." The specification and a drawing will be found in the weekly number of the official *Gazette* of the United States Patent Office issued on March 11th, 1902.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At the Primary Examination the following candidates passed in the subjects indicated :—

PART I.

Biology.—S. F. H. Everill, Birmingham, and C. E. Pring, Royal Free Hospital.

Chemistry.—S. F. H. Everill, Birmingham, and J. C. Fletcher, Royal Free Hospital.

Materia Medica and Pharmacy.—M. S. Jevons, Royal Free Hospital; T. Lea, Glasgow and Bristol; J. G. Lewis, Cardiff; E. H. Price, Birmingham; and E. Sergeant, Royal Free Hospital.

PART II.

Anatomy.—G. H. Almond, Cambridge and Leeds; A. Bernfeld, Royal Free Hospital; E. P. J. Dawes, Birmingham; L. Doudney, Guy's Hospital; A. G. C. Findlay, University College Hospital; A. G. Gamble, Leeds; H. S. Gettings, Birmingham; G. P. K. Grey, Middlesex Hospital; C. Homer, St. Mary's Hospital and Bristol; L. J. Paterson-Clavier, Guy's Hospital; J. W. Peatt, London Hospital; J. O. Sergeant, Leeds; F. A. K. Stuart, St. Mary's Hospital; R. J. C. Thompson and J. A. R. Wells, St. Thomas's Hospital; and P. B. Whittington, London Hospital.

Physiology.—A. Bernfeld, Royal Free Hospital; L. Doudney, Guy's Hospital; F. C. M. Gabites, Edinburgh; H. S. Gettings, Birmingham; J. C. Johnson, Middlesex Hospital; J. G. Lewis, Cardiff; G. B. Messenger, Westminster Hospital; L. J. Paterson-Clavier, Guy's Hospital; J. W. Peatt, London Hospital; R. J. C. Thompson, and J. A. R. Wells, St. Thomas's Hospital; and P. B. Whittington, London Hospital.

UNIVERSITY OF GLASGOW.—The following have passed the first professional examination for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) in the subjects indicated (B., Botany; Z., Zoology; P., Physics; C., Chemistry):

George Victor Anderson (P., C.), James Montgomery Anderson (Z., C.), Andrew Hamilton Arnott (P.), George Duncan Morrison Beaton (P.), Donald Price Bremner (Z., P.), William Archibald Campbell (Z., C.), Donald Livingston Carmichael (C.), Charles Game Angus Chislett (B.*, C.), Henry Howard Christie (Z., C.), John Sawers Clark (Z., C.), Andrew Donaldson Cowan (B.*, P.), Thomas Lawson Craig (Z.*, C.), Arthur Muir Crawford (Z., C.), Robert Donald (Z.), Richard John Driscoll (B.), James Duntar (B.), Allan Dunsmuir (Z.), Eric John Dyke (P.), Ernest Milne Eaton (Z.*, C.), William Miller Fairlie (Z., C.), Thomas Scott Forrest (P., C.), James Wilfrid Georgeson (Z., P.), William Gilbert (Z., C.*), William Gillilan (C.), Percy Frederick Grant (Z., C.), Arnold Harris Gray (B., Z., P.), Robert Neil Guthrie (Z.*, C.), John Hammond (P.), William Towers Hardie (Z.), Robert M'Cowan Hill (P.*), John Keys (Z., C.), James Dunlop Kidd (Z.), George Hugh Logan (B., P.), Angus Macaulay (B.), Alexander M'Call (Z., C.), John M'Cartney (P.), Thomas M'Cosh (P., C.), David MacDonald (Z., C.), James M'Farlane (Z., C.), John Robert M'Gilvray (Z., C.), William Anderson M'Kellar (Z.), Thomas Cooper Mackenzie (Z.), William Ferguson Mackenzie (Z.*, C.), William Macleod (B., P., C.), John M'Millan (B., Z., P., C.), Alister Argyle Campbell M'Neill (Z., C.), Charles James Colquhoun Macquarie (Z.*, C.), Andrew Maguire (Z., P.), Robert Marshall B., Z.), Robert May (P.), Allan Frederick Miller (C.), John Miller (Z.*, C.), Robert Stewart Miller (Z.), William Miller (Z.), Peter Mitchell, M.A. (B.*, Z.*), Robert Wright Mitchell (Z.*), William Struthers Moore (B., P.*), Archibald Naismith (B., Z.), Patrick Joseph O'Hare (B., P.), John Oswald (Z., P.), James Hegg Paul (Z., C.), Daniel M'Kinlay Reid (Z., P.), John Reid (B., P.), Frederick Gordon Robertson (Z., C.), James Henry Anderson Robertson (Z., P.), Murdoch Mann Rodger (B.), William James Rutherfurd (Z., C.*), John Sharp (Z., C.), Robert Wilfrid Simpson (P.), Robert Alexander Slater (C.), Thomas Baillie Smith (Z., C.), James Stevenson (C.), John Stevenson (Z.*, C.), Archibald Stewart (Z., P.), John Torrance Weir Stewart (B., Z.), Thomas Strain (P.), David Laurence Alexander Tate (B., Z.), Charles Samson Thomson (Z., C.), Hugh White (Z.), David John Williams (Z.), George Haswell Wilson (Z., C.), Samuel Wilson, M.A. (Z., C.), William Alexander Wilson (P.), and Thomas Winning, M.A. (B., Z.).

Women.—Jeannie Montgomery Andrew (P.*, C.), Annie Rennie Hird (P., C.), Rose Isobel Hudson (P.*, C.), Agnes M'Phun (Z.), Edith Oversby (P., C.), Vera Dagmar Reis (P.*, C.), Margaret Baillie Taylor (C.), and Christina Gibson Thomlinson (B., Z.).

The following have passed the second professional examination for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) in the subjects indicated (A., Anatomy; P., Physiology; M., Materia Medica and Therapeutics):—

Scott Campbell Adam (A., P.), Archibald Craig Amy (A., P., M.), Henry Graeme Anderson (A., P.), James Richard Sunner Anderson (A.), John William Arthur (M.), Allan Robertson Barrowman (A., P.), George Beattie (P., M.), Robert Daniels Bell, M.A. (A., P.), David Blackley (A., P., M.), George Thomson Bogie (M.), Robert George Bradford (A.), Forrest Brechin (A., P., M.), Thomas Brodie (P., M.), Charles Brown (P., M.), John Brown (A.), George Yuille Caldwell (A., P., M.), Peter Carrick, M.A. (A., P., M.), Robert Buchanan Carslaw, M.A. (A.*, P.*), James Alexander Cowie, B.A., B.Sc. (A., P., M.), John Craig Crawford (P., M.), Thomas Thornton Macklin Dishington (A., P., M.), Hugh M'Millan Donaldson (A.), George Horn Downie (A.), Charles Milligan Drew, M.A. (A., M.), Hugh Harvey Fulton (A.*, P.*), William Harold Gillatt (A., P.), James Glover (M.*), David Livingstone Graham (A., P.), John Graham (A.*, P.*), Donald John Gollan Grant (A., P., M.), George Munn Gray (A.*, P.*), Louis Leisler Greig (A., P.), Alexander Robertson Forrest Hay (A., P.), John Cochrane Henderson (A., P.), Arthur Innes (A.*, P.), Alexander Jamieson (A.), Robert Dallas Kennedy (A.), John Kerr (M.), George Notman Kirkwood (A., P.), Robert Thomson Leiper (A., P.*, M.), Thomas Symington Macaulay (A., P.), Donald Carmichael M'Cormick (A., P.), Joseph Glaister M'Cutcheon (P.), John Finlay Macdonald (M.), James Boston M'Ewan (A., P.), Tom Duncan M'Ewan (A., P.), Duncan Macfadyen (A., P.), John M'Farlane (A., P.), Robert Macfarlane (A., P.), Robert Clark M'Guire (A., P., M.), James M'Houl (A., P.), Milne M'Intyre (A., P., M.), Ronald Mackinnon (A., P., M.), David James M'Leish, M.A. (A.*, P.), Roderick MacLeod (M.), Norman Smith MacNaughtan (M.), Andrew Brown M'Pherson (P., M.), William Main (A., M.), Andrew Meek (A., P., M.), Peter Millar (A.), Gavin Denholme Muir (P.), John Muir (A., P.), Macdonald Munro (A., P.), Alexander Harper Napier (A.), George Clement Neilson (A., P.), Thomas Orr (P., M.), Howard Henderson Patrick (A., P.), Arthur Geoghegan Paxton (M.), John Clegg Pickup (A., P.), Alexander M'Millan Pollock (M.), Andrew Maclean Pollock (A., P.), James Porter (A., P.), William Murdoch Rae (A., M.), Donald Ronald Reid (A., P., M.), Daniel Stevenson Richmond (A.), James Watson Richmond (A.), Berkeley Hope Robertson, M.A. (A., P.*), Robert Thin Craig Robertson (P.), Campbell Ross (M.), John Samson (P.), Lawrence Drew Shaw (A.), Malcolm Alexander Sinclair (P., M.), George Goldie Smith (A., P.*), James Alexander Somerville (P., M.), John Stewart (P.), Norman Burgess Stewart (M.), William Craig Stewart (A., P., M.), Murray Ross Taylor (A., P., M.), William Templeton (A., P.*), James White Thomson (A.*, P.*), Robert Watson (A.), Archibald Crombie West (A., P.), George Henry Wiltish (A.), George Wilson (P., M.), Robert M'Nair Wilson (M.*), James Wyner (P., M.), and Watson Young (A.).

Women.—Jeanie Auld (A.), Annie Agnes Baird (A., M.), Annie M'Caig Black (A.), Agnes Wallace Cameron (A.), Roberta Campbell (A., P., M.), Ethel Lily Chapman (A., M.), Jane Hamilton M'Ilroy, M.A., B.Sc. (A.), Jane Stark M'Lauchlan (A., P., M.), Alice Wesley Maclean (A., M.), Margaret Walker Millar (M.), Jessie Emily Munro (P.), Charlotte Reid Park (A., M.), Ethel Jane Mildred Pryce (A., M.), Jane Reid Shaw (A., P.), Lily Smellie (A., P.), Elizabeth Taylor Talbert (M.), and Annie May Yates (P.).

The following have passed the third professional examination for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) in the subjects indicated (P., Pathology; M., Medical Jurisprudence and Public Health :—

Robert Adam (P., M.), William Kirkpatrick Anderson (P., M.), Thomas Ballantyne (M.), Andrew Farm Bell (M.), Thomas Bennett, M.A. (M.), Archibald Grainger Bisset (P., M.), Alexander Blair (P., M.), James Campbell Bringan (P., M.), Robert Bruce (M.), Daniel Lyall Carmichael (M.), Alexander Erskine Clark (M.), Andrew Connal (P., M.), Hugh Collin Davies (P., M.), Mitchell Innes Dick (P.), David Dickie (P., M.), David Garfield Dykes (P., M.), James Eadie (P., M.), Cunison Charles Finlator (P., M.), Eric Dalrymple Gairdner (P., M.), John Ritchie Gilmour (P.), John Ranson, M.A. (P., M.), William Harvey (P.), Leslie Charles Broughton Head (P., M.), Neil M'Coll Hutchison (P., M.), Malcolm Hutton, M.A., B.Sc. (P.*, M.), John Muir Kelly (P., M.), Alexander Dingwall Kennedy (M.), Robert Laurie (P., M.), Archibald Leitch (P., M.), Thomas Walker Love (P., M.), Donald Macaulay (P.), James Duff M'Culloch (P., M.), David Duncan Fraser Macintyre (P., M.), John Matheson Mackellar (P.), Norman Alexander Macleod (P.), James Anthony Macvea (P., M.), Harry Somerville Martyn, M.A. (M.), Alexander Matheson, M.A., B.Sc., (P.*, M.), Spencer Mort (P., M.*), Gavin Muir (P., M.), David Penman (M.), William Rankin, M.A. (P., M.), Daniel Falconer Riddell, M.A. (P., M.), Peter Hamilton Robertson (P.), Frank Donald Scott (P.), William Garrow Shand (P., M.), John Black Stevenson (P.), William David Henderson Stevenson, M.A. (P.*), William Stewart (P., M.), Arthur William Sutherland, M.A. (P., M.), John Wilson Sutherland (P.*, M.), Peter Lindsay Sutherland (P.*, M.*), John Restell Thomas (P.), John Turnbull (P.), Joseph Walker, M.A. (P.), Hugh Fleming Warwick (M.), William Norman West Watson (P., M.), Robert Talt Wells, M.A. (P.), John Forrest Weston (P.), Griffith John Williams (P., M.), James Wilson (P., M.), Eldred Wright (P., M.).

Women.—Mary Charlotte Cameron (P., M.), Jane Campbell (P., M.), Jessie Galloway Duncan (M.), Kate Fraser, B.Sc. (P., M.), Mary Lauchline M'Neill (M.), Anna Pollock Martin (P., M.), Eliza Jane Miller (P., M.), Isabel Deane Mitchell (P., M.), Margaret Hossack Smart (P., M.), Jessie Marie Stewart (P., M.).

* Passed with distinction in the subjects indicated.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin*: Professor Beckmann of Leipsic has been appointed to the chair of Pharmaceutical Chemistry, with which is combined the charge of the newly-established Institute for Pharmaceutical Chemistry.—*Budapest*: Dr. Emerich Havas, *privat-docent* of Dermatology, has been promoted to an Extraordinary Professorship. Dr. Krompecher has been recognised as *privat-docent* of Physiology.—*Freiburg*: Dr. Hugo Sellheim, *privat-docent* of Midwifery, has been promoted to an Extraordinary Professorship.—*Halle*: Dr. H. Winternitz has been recognised as *privat-docent* of Medicine.—*Heidelberg*: Dr. Alexander Nehrkorn has been recognised as *privat-docent* of Surgery.—*Innsbruck*: Dr. Max von Vintschgau, Professor of Physiology, is about to retire.—*Lemberg*: Dr. Roman Renecki has been recognised as *privat-docent* of Medicine.—*Munich*: Professor J. von Bauer has been appointed to succeed his late father-in-law Professor von Ziemssen, both in the chair of Medicine and in his hospital appointment. For the vacancy thus caused in the second chair of Clinical Medicine the following names have

been selected by the Medical Faculty: (1) Professor Friedrich Müller of Basle; (2) Professor Krehl of Tübingen; and (3) Professor Stintzing of Jena.—*Philadelphia (Polyclinic):* Dr. John H. Gibbon has been appointed to the chair of Surgery in succession to Dr. Morton, resigned.—*Prague (Bohemian University):* Dr. Scherrer has been promoted to an Extraordinary Professorship of Infantile Diseases.—*Rome:* Dr. Attilio Bonanni has been recognised as *privat-docent* of Physiological Chemistry.—*Strasburg:* Dr. Paul Manasse, *privat-docent* of Otology, has been promoted to an Extraordinary Professorship.—*Tübingen:* Dr. L. Krahl, Professor in the University of Greifswald, has been appointed to the chair of Clinical Medicine in succession to the late Professor von Liebermeister.—*Turin:* Dr. Edmondo Trombetta has been recognised as *privat-docent* of Ophthalmology.—*Vienna:* Dr. Theodor Escherich, Professor in the University of Graz, has been appointed to the chair of Children's Diseases in succession to the late Professor von Widerhofer.

HOSPITAL SATURDAY.—The Council of the Hospital Saturday Fund will hold its annual special collection in the workshops and business houses of the metropolis on Saturday, Oct. 11th. At the quarterly meeting of the board of delegates held at the central offices, Gray's Inn-road, W.C., on April 5th it was announced that during 1901 28,207 letters of recommendation to the medical charities had been issued upon the application of the collectors. The receipts from the workshops, &c., from Jan. 6th to March 15th, amounted to £2170 14*s.* 7*d.*, as compared with £2387 at the corresponding period of last year. The March number of the "Hospital Saturday Fund Journal" among other interesting matter contains an admirable paper by Dr. T. D. Acland on "Our Fight against Small-pox, or Common Sense and Vaccination."

DONATIONS AND BEQUESTS TO HOSPITALS.—By the will of Miss Anne B. Miles of Highgate £3000 are bequeathed to the Mission to Deep Sea Fishermen for a hospital mission ship to be called the Joseph and Sarah Miles Mission Ship. To the North-West London Hospital, the London Fever Hospital, the Great Ormond-street Hospital for Sick Children, the Cripples' Home in Marylebone, the Mount Vernon Hospital for Consumption, the Ventnor Hospital for Consumption, and the Royal Seabathing Infirmary at Margate £100 each are given, and £50 to the North London Nursing Association, Upper Holloway.—Mr. Arthur Ocran Crooke of St. Margaret's-on-Thames has bequeathed to his trustees £20,000 in trust for such hospital or hospitals in the counties of London and Surrey and convalescent homes in connexion with such hospitals as the trustees may choose.—By his will Mr. C. Sellers of York has bequeathed £1050 to the York County Hospital and £500 to the York Dispensary.—Mr. W. J. Clutton of York has left by his will £1000 to the York County Hospital.

THE FERNLEY OBSERVATORY.—In his report for the year 1901, Mr. Joseph Baxendell, meteorologist to the Southport Corporation and director of the Fernley Observatory, supplies a variety of interesting details relative to the working of some of the instruments, and in particular of Dines's pressure-tube recording anemometer, Dines's non-oscillating pressure plate maximum anemometer, Baxendell's recording anemoscope, and Halliwell's float-pattern self-recording rain gauge. The last-named instrument has been found to furnish a faithful and distinct record alike of the heaviest tropical downpour and of a wet fog or misty drizzle. In order that snow which has fallen may be melted and for the purpose of preventing damage to the instrument from frost it can be warmed by a Notkin carburetter which will continue to act although not attended to for a week or even a month at a time. The highest temperature registered at the observatory during the year was 87·2° F. on July 20th; the lowest was 21·0° on Jan. 9th and also on Dec. 22nd. The heaviest fall of rain on any one day was 1·76 inches on Nov. 11th.

INTERNATIONAL CONGRESS OF AMERICANISTS.—It is announced in the April number of *Man*, a journal published by the Anthropological Institute, that the thirteenth session of the International Congress of Americanists will be held in the American Museum of Natural History, New York, from Oct. 20th to the 25th, 1902. The subjects to be discussed by the congress relate to the origin, distribution, physical characteristics, &c., of the native races of America and the history of the early contact between America and the Old World. All persons interested in the study of the archæology, the ethnology, and the early history of the two Americas may become members of the congress by signifying their desire to the general secretary of the commission of organisation, Mr. M. H. Saville, American Museum of Natural History, New York, together with a remittance of 8*s.* Communications may be oral or written, and in French, German, Spanish, Italian, or English.

DEATH OF A MEDICAL CENTENARIAN.—The March number of the *Pacific Medical Journal* states that Dr. Henry Carson, of Forest City, Pennsylvania, has died at the age of 108 years, and that he practised his profession up to last October.

ROYAL ALEXANDRA HOSPITAL, RHYL.—It is announced that the Prince and Princess of Wales will on May 12th visit Rhyl for the purpose of opening the new buildings of the Royal Alexandra Hospital, the foundation-stone of which was laid by Her Majesty Queen Alexandra in 1894. The cost is estimated at over £40,000 and £2500 are still required to complete this estimate. Some 700 patients are received each year at the hospital, mostly from the large towns of Staffordshire, Cheshire, Shropshire, Warwickshire, Lancashire, and other English counties.

GLOUCESTER INFIRMARY.—A special appeal, signed by the Earl of Ducie (lord lieutenant of the county) and Colonel Curtis-Hayward (chairman of the committee), has just been issued on behalf of the Gloucester General Infirmary and Eye Institution which needs the sum of £10,000 to bring it up to the needs of modern requirements. The Earl of Ducie heads the appeal with a subscription of £500; Mr. W. E. Price gives £300; Lord Fitzhardinge gives £200; and 14 other subscribers give £100 each.

BRISTOL EYE HOSPITAL.—The annual meeting of the subscribers to this institution was held on March 26th, under the presidency of the Right Hon. Lewis Fry. The ninety-first annual report, which was read, stated that 5503 new out-patients were treated during 1901, and that the in-patients admitted to the hospital numbered 402. The financial statement showed that the expenditure exceeded the income by nearly £350, and that there still remained a debt of £1900 on the recent extension of the hospital which was carried out at a cost of £7300.

PRESENTATIONS TO MEDICAL PRACTITIONERS.—At Barnstaple on March 24th, Mr. Mark Jackson, M.D. R.U.I., M.R.C.S. Eng., L.S.A., who is leaving Barnstaple, where he has been medical officer of health for the past 15 years, was presented by the residents with a cabinet of table silver, a silver kettle, and an album bearing the names of the subscribers, as a mark of respect and esteem. The members of the Barnstaple Congregational Church have presented Dr. and Mrs. Jackson with a silver inkstand.—The members of the Princetown (Devon) Branch of the St. John Ambulance Association, on March 21st presented Mr. Daniel Brough, M.B., C.M. Edin., L.R.C.P. Lond., M.R.C.S. Eng., with a silver-mounted inkstand as a mark of appreciation for his services as honorary lecturer.—Mr. George Henry Temple, M.B., C.M. Edin., of Weston-super-Mare, who recently rendered assistance to a police-constable in the arrest of a violent prisoner, was on March 23rd presented with a silver cigarette case, subscribed for by the local members of the constabulary, in recognition of his valuable services on that occasion.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Beer Bill.

IN connexion with the order for the second reading of the Beer Bill Mr. FLOWER has given notice that he will move as an amendment: "That this House declines to proceed with the consideration of a Bill interfering with freedom in the manufacture of beer in this country which, whilst it imposes upon the scientific development of British brewing industries arbitrary restrictions that cannot be enforced upon foreign competitors, in no way provides safeguards for the public health or secures for consumers a guarantee as to the purity of the materials employed."

The Midwives Bill.

The consideration of this Bill as amended by the Grand Committee

has been put down for Wednesday, June 4th, when there is considerable possibility of its being taken.

HOUSE OF COMMONS.

TUESDAY, APRIL 8TH.

The Use of Lead Pills.

Mr. COGHILL asked the Home Secretary whether his attention had been called to an inquest held by the coroner for North-West Staffordshire, on March 18th, on a married woman residing at Porthill, when the coroner, in summing up, stated that it appeared that the deceased was a milliner and had never been employed in occupations likely to produce lead-poisoning, and consequently could not have got this condition in the course of her trade; that it could not be difficult to find out where this lead was obtained; and that if this had been done and the person who supplied it knew for what purpose he would find himself charged with manslaughter at least; and, in view of the fact that the jury returned a verdict to the effect that death was due to lead-poisoning brought about by deceased taking pills for a certain purpose, whether he would cause inquiries to be instituted as to the person who supplied the deceased with the lead pills.—Mr. RITCHIE said: I understand that active inquiries have been made and that no clue has been obtained to trace the person who supplied the pills.—Mr. COGHILL: May I ask the right hon. gentleman whether in the course of the inquiries made it has been found that this practice is at all common.—Mr. RITCHIE: The inquiries have not been directed to that general question but to the question of where the particular pills were bought.

Equipment of Military Hospitals in India.

Mr. WEIR asked the Secretary of State for India whether arrangements could be made for the military hospitals in India to be provided with surgical instruments of modern pattern, and would surgical instruments with wooden handles either be withdrawn or refitted with metal handles.—Lord GEORGE HAMILTON said: I am informed that all instruments sent to India in recent years have metal handles, but I will inquire more fully into the matter and if there is any reason to suppose that a large proportion of the surgical instruments now in use in India are not of the most approved pattern the Government of India will, I have no doubt, be anxious to replace them with as little delay as possible.

The Small-pox Epidemic in London.

Mr. BARTLEY asked the President of the Local Government Board whether he could state approximately the cost which the present epidemic of small-pox had involved in the London area up to March 31st last.—Mr. LONG replied: I understand that the epidemic has involved an expenditure of about £280,000 on the part of the managers of the Metropolitan Asylums Board during the half year to the end of March last. This amount includes a sum of £225,000 in respect of special expenditure in connexion with small-pox accommodation and transport. I have no information at present as to the amounts expended by boards of guardians and other local authorities in London in connexion with the epidemic. There may be further information later and if the hon. Member moves for a return I shall be prepared to grant it.

Vaccination Statistics.

Mr. CORBIE GRANT asked the President of the Local Government Board (1) whether he had observed in the weekly returns of the Registrar-General that an infant, born on the hospital ship *Atlas* on March 1st, was vaccinated on that day and died from small-pox on the 12th, and that many other similar cases occur in the returns; (2) whether in view of these results he would consider whether the vaccination of such children after infection should be abandoned; and (3) as in several cases of death from small-pox after vaccination the dates of vaccination were omitted and the words "vaccinated during the incubation period" or "vaccinated only after infection" were employed, whether he would direct the hospital authorities to supply exact particulars to the Registrar-General, so as to obtain uniformity in these statistics.—Mr. LONG replied: As regards the first paragraph the answer is in the affirmative. With respect to the second I could not undertake to recommend the course suggested. As to the third paragraph I have communicated with the Registrar-General, who states that it is impossible to obtain uniformity in all cases, and that under the circumstances he considers that the terms employed are the best that can be devised.

The Supply of Government Lymph.

Mr. BARTLEY asked the President of the Local Government Board whether he could state what progress had been made in the supply of Government lymph; whether the Local Government Board had been able to overtake the demand for it; and whether any arrangements had yet been made to supply private practitioners as well as the public vaccinators with Government lymph for primary and secondary vaccination at about cost price.—Mr. LONG replied: I am glad to say that since the early part of last month I have been able to meet all the demands made by public vaccinators for lymph not only for primary vaccinations but also for revaccinations. As regards the last part of the question I have carefully considered the matter, but I regret that I have not seen my way at present to comply with the suggestion of my hon. friend.

BOOKS, ETC., RECEIVED.

BERGMANN, J. F., Wiesbaden (F. BAUERMEISTER, 49, Gordon-street, Glasgow).

Uber die Ätiologie des Carcinoms, mit besonderer Berücksichtigung der Carcinome des Scrotums, der Gallenblase, und des Magens. Von Dr. Gustav Fütterer, Professor der Pathologie an der Universität in Chicago. Price M. 4, or 4s.

Arbeiten aus der Pathologisch-Anatomischen Abteilung des Königl. Hygienischen Instituts zu Posen. Von Professor Dr. O. Lubarsch. Price M. 9, or 9s.

Vier Vorlesungen aus der Allgemeinen Pathologie des Nervensystems, gehalten vor dem Royal College of Physicians of London, am 19., 21., 26., und 28. Juni, 1900, von Frederick V. Mott, M.D. Lond., F.R.S. Übersetzt von Dr. Wallach. Mit einem Vorwort von Professor Dr. L. Edinger. Price M. 2.80, or 3s.

Die Berufskrankheiten des Ohres und der Oberen Luftwege. Von Dr. med. Friedrich Röpke, in Solingen. Price M. 5, or 5s.

CHURCHILL, J. AND A., 7, Great Marlborough-street, W.

Excess of Salt in the Diet, with Three Other Factors, the Probable Causes of Cancer. By James Braithwaite, M.D. Lond. Price 1s.

Hare-lip and Cleft Palate. By R. W. Murray, F.R.C.S., Surgeon, David Lewis Northern Hospital, Liverpool. Price 5s.

A Synopsis of Surgery. By R. F. Tobin, F.R.C.S.I., Surgeon to St. Vincent's Hospital, Dublin; Examiner in Surgery, Royal College of Surgeons, Ireland. Second edition. Price 6s. 6d.

The Operations of Surgery. Intended especially for the use of those recently appointed on a Hospital Staff and for those preparing for the higher examinations. By W. H. A. Jacobson, M.Ch. Oxon., F.R.C.S., Surgeon, Guy's Hospital, and F. J. Steward, M.S. Lond., F.R.C.S., Assistant Surgeon, Guy's Hospital. Fourth edition. Vols. i. and ii. Price £2 2s.

CLARK, R. AND R., LIMITED, Edinburgh.

The Causes of Death among the Assured in the Scottish Widows' Fund and Life Assurance Society from 1874 to 1894 inclusive. Reported by Claud Muirhead, M.D., F.R.C.P.E., Medical Officer of the Society.

ENGELHARD AND CO., G. P., 358-362, Dearborn-street, Chicago, Illinois.

The Standard Medical Directory of North America, 1902. A Directory of Practising Physicians in the United States of America, Canada, Cuba, Mexico, and Central America. Price to Physicians $10.00.

HIRZEL, S., Leipzig.

Lehrbuch der Kinderkrankheiten für Aerzte und Studirende. Von Dr. Adolf Baginsky of Berlin. Seventh enlarged and revised edition. Price M. 16.50.

LEWIS, H. K., 136, Gower-street, W.C.

A Concise History of Small-pox and Vaccination in Europe. By Edward J. Edwardes, M.D. Lond., M.R.C.P. Lond., Author of "Vaccination and Small-pox." Price 2s. 6d. net.

MACMILLAN AND CO., LIMITED, London (THE MACMILLAN COMPANY, New York).

The Climates and Baths of Great Britain, being the Report of a Committee of the Royal Medical and Chirurgical Society of London. Volume ii. The Climate of London and of the Central and Northern Portions of England, together with those of Wales and of Ireland. Price 12s. 6d. net.

The Treatment of Injuries by Friction and Movement. By Wharton P. Hood, M.D. St. Andrews, M.R.C.S., L.S.A. Price 4s. 6d.

NATHAN, FERNAND, 13, Rue de Condé, Paris.

La Santé de l'Écolier. Par le Dr. C. Delvaille, de Bayonne, Membre du Conseil d'Hygiène, &c., et le Dr. A. Brevcq, de Bayonne, Médecin-Inspecteur des Etablissements scolaires, &c. Troisième édition. Préface de M. le Dr. A. J. Martin, de Paris. Price not stated.

NAUD, C., 3, Rue Racine, Paris.

Les Fonctions Hépatiques. Par MM. A. Gilbert, Professeur à la Faculté, et P. Carnot, Docteur ès Sciences. Price 5 francs.

PENTLAND, YOUNG J., Edinburgh and London.

The Study of the Pulse, Arterial, Venous, and Hepatic, and of the Movements of the Heart. By James Mackenzie, M.D. Edin., Burnley. Price not stated.

SELL, HENRY, 167, Fleet-street, E.C.

Sell's Dictionary of the World's Press and Advertisers' Reference Book. 1902. By Henry Sell. Price 7s. 6d.

SOCIETÀ PER GLI STUDI DELLA MALARIA, Rome. (WILLIAMS AND NORGATE, London).

Atti della Società per gli Studi della Malaria. Volume ii. Price not stated.

WRIGHT, JOHN, AND CO., Bristol (SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., Limited, London).

An Introduction to Dermatology. By Norman Walker, M.D. Lond., F.R.C.P. Edin. Second edition. Revised and enlarged. Price 9s. 6d. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number.

ANGUS, H., M.D. Aberd., has been appointed Medical Officer of Health to the Bingley Urban District Council.

BENNETT, C. J., M.R.C.S., has been re-appointed Medical Officer of Health to the Chapel-en-le-Frith Rural District Council.

BURTON, H., L.R.C.P. Irel., M.R.C.S., has been re-appointed Medical Officer of Health to the Marple District Council.

BYTHELL, W. J. S., B.A., M.B. Ch.B., has been appointed Junior Anæsthetist to the Manchester Royal Infirmary, vice J. Turville Smith, resigned.

CLAPHAM, LUCY B., M.B. Lond., has been appointed Obstetric Physician to the New Hospital for Women, Euston-road, and Assistant Anæsthetist to the Royal Free Hospital.

COPE, RICARDO, M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon to the Dorset County Hospital, Dorchester.

DALBY, AUGUSTUS WILLIAM, L.R.C.P., L.R.C.S. Edin., has been re-appointed Medical Officer of Health of the Frome (Somerset) Rural District.

FRY, W. W. B., M.B., M.S. Edin., has been re-appointed Medical Officer of Health to the Builth Rural District Council.

GREENWOOD, G. S., M.R.C.S., L.R.C.P. Lond., has been re-appointed Medical Officer of Health to the Ossett Corporation.

HARMAN, N. BISHOP, M.A., M.B. Cantab., F.R.C.S. Eng., has been appointed Ophthalmic Surgeon to the Belgrave Hospital for Children, vice Treacher Collins, resigned.

HARNETT, CHARLES J., M.D., L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Assistant Visiting Surgeon to the Royal Sea Bathing Hospital, Margate.

HODGSON R. E., M.R.C.S., L.R.C.P. Lond., has been appointed Senior Resident Surgeon to the Royal Sea Bathing Hospital, Margate.

JEFFERY, H. FOSTER, M.B., Ch.B. Vict., has been appointed Honorary Surgeon to the Bury Infirmary and Police Surgeon for Heywood.

KEMPE, C. M., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Shoreham Urban District Council.

LISTON, MARY F., M.B., B.S. Glasg., has been appointed Junior Assistant Medical Officer to the Govan Parish Council.

MARSHALL, FRANK E., M.B., Ch.B. Vict., L.S.A., has been appointed Honorary Surgeon to the St. George's Hospital for Diseases of the Skin, Liverpool.

MATHER, R. O., L.R.C.P., L.R.C.S. Edin., has been re-appointed Medical Officer of Health to the Billinge Urban District Council.

PRIOR, PERCIVAL UNDERDOWN, M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer to the Destitute and Aborigines in the district of Penola, South Australia.

VERCO, W. A., M.B., Ch.B. Adel., has been appointed Assistant Gynæcologist to the Adelaide Hospital, South Australia.

WHITE, MARGARET M.B. Melb., has been appointed House Surgeon to the Children's Hospital, Adelaide, South Australia.

WILSON, T. G., M.B., Ch.M. Syd., has been appointed Assistant Gynæcologist to the Adelaide Hospital, South Australia.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BETHNAL GREEN INFIRMARY.—Third Assistant Medical Officer. Salary £100 per annum, with apartments, board, and washing.

BIGGLESWADE RURAL DISTRICT COUNCIL.—Medical Officer of Isolation Hospital and Small-pox Hospital. Salary £80 a year, additional fee of £5 5s. a week if and when patients are treated in the small-pox hospital.

BIRMINGHAM AND MIDLAND HOSPITAL FOR SKIN AND URINARY DISEASES, John Bright-street, Birmingham.—Surgical Assistant. Honorarium 50 guineas per annum.

BIRMINGHAM WORKHOUSE INFIRMARY.—Assistant Resident Medical Officer. Salary £100 per annum, with apartments, rations, attendance, &c.

BRADFORD ROYAL INFIRMARY.—Dispensary Surgeon, unmarried. Salary £100 per annum, with board and residence.

BRENTFORD UNION WORKHOUSE AND SCHOOLS, Isleworth.—Assistant Medical Superintendent, unmarried. Salary £130 per annum, with apartments, rations, washing, &c.

BRIDGWATER INFIRMARY.—House Surgeon. Salary £80 a year, with board and residence.

CAMBRIDGESHIRE, ETC., LUNATIC ASYLUM, Fulbourn, near Cambridge.—Assistant Medical Officer (unmarried). Salary £150 per annum, with board, lodging, and attendance.

CENTRAL LONDON SICK ASYLUMS at Cleveland-street or Hendon.—First Assistant Medical Officer. Salary £120 per annum, with board and residence.

CITY OF NOTTINGHAM PARISH INFIRMARY.—Assistant Medical Officer. Salary £160 per annum and rooms.

CORNWALL COUNTY ASYLUM, Bodmin.—Junior Assistant Medical Officer, unmarried. Salary £130, rising to £150, with board, apartments, &c.

COSFORD UNION, Suffolk, Bildeston District.—Medical Officer and Public Vaccinator. Salary £72 per annum (exclusive of fees approximating to £76 per annum).

COSFORD UNION WORKHOUSE, Suffolk.—Medical Officer. Salary £50 per annum, with fees.

CREWE BOROUGH.—Medical Officer of Health. Salary £350 per annum.

CROYDON COUNTY BOROUGH LUNATIC ASYLUM, Warlingham, Surrey.—Medical Superintendent. Salary £450 per annum, with unfurnished house, fuel, light, washing, &c.

CUMBERLAND AND WESTMORLAND ASYLUM, Garlands, Carlisle.—Junior Assistant Medical Officer, unmarried. Salary £130, rising to £150 per annum, with board, lodging, &c.

DURBAN, NATAL, SOUTH AFRICA.—Medical Officer of Health. Salary at rate of £750 per annum.

DURHAM COUNTY ASYLUM.—Junior Assistant Medical Officer wanted. Salary £150, rising to £180 a year, with apartments, board, laundry, and attendance.

DURHAM COUNTY HOSPITAL.—House Surgeon and Assistant House Surgeon. Salary of Senior House Surgeon £100, Junior £85, with board and lodging in each case.

FISHERTON ASYLUM.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and washing.

GROVE HALL ASYLUM, Bow, London, E.—Junior Assistant Medical Officer. Salary at rate of £120 a year, with board, apartments, attendance, and washing.

GUY'S HOSPITAL.—Demonstrator of Bacteriology and Bacteriologist. Salary about £180, rising to £200 per annum.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried, for six months. Salary £20, washing allowance £2 10s., with board and residence. Also Medical Registrar. Honorarium 50 guineas a year.

KENT AND CANTERBURY HOSPITAL.—Surgeon.

LEEDS GENERAL INFIRMARY.—House Physician for six months. Board, lodging, and washing provided.

LEEDS HOSPITAL FOR WOMEN AND CHILDREN.—House Surgeon, non-resident, for six months, eligible for renewal. Salary at rate of £125 per annum.

LINCOLN HOSPITAL FOR THE INSANE, The Lawn.—Assistant Medical Officer. Salary £100 a year.

LIVERPOOL, COUNTY ASYLUM, Rainhill.—Assistant Medical Officer, unmarried. Salary £150 per annum, with prospect of increase, with apartments, board, attendance, and washing.

LIVERPOOL STANLEY HOSPITAL.—Third House Surgeon. Salary £70 per annum, with board, residence, and washing.

LONDON COUNTY ASYLUM, Horton, near Epsom, Surrey.—Junior Assistant Medical Officer. Salary £150 per annum, with board, furnished apartments, and washing. Also Dispenser. Salary £110 per annum, rising by £10 a year to £150, with dinner daily.

LONDON TEMPERANCE HOSPITAL, N.W.—Assistant Resident Medical Officer for six months. Honorarium at rate of 50 guineas per annum, with board and residence.

MANCHESTER SOUTHERN AND MATERNITY HOSPITAL.—Resident House Surgeon. Honorarium £50 per annum and board.

NEWCASTLE-ON-TYNE DISPENSARY.—Visiting Medical Assistant. Salary £160, rising to £180.

NORFOLK AND NORWICH HOSPITAL.—House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £160 per annum, increasing by £10 every year, with apartments, attendance, light, and fuel.

OLDHAM INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board, residence, and washing.

PARISH OF HAMMERSMITH TEMPORARY INFIRMARY, Ducane-road, Wormwood Scrubs, S.W.—Visiting Medical Officer. Salary £50 per annum.

POPLAR AND STEPNEY SICK ASYLUM at Bromley, Middlesex, E. Second Assistant Medical Officer. Salary £100 per year, with rations, apartments, and washing.

PUBLIC DISPENSARY, 59, Stanhope-street, Clare Market.—Resident Medical Officer, unmarried. Salary £105 per annum, with furnished apartments, coals, and gas.

STOKE-ON-TRENT INFECTIOUS DISEASES HOSPITAL, Bucknall.—Resident Assistant Medical Officer. Salary £80 per annum, with board, residence, and washing.

TEIGNMOUTH HOSPITAL, S. Devon.—House Surgeon. Salary £70 a year, with board, lodging, and washing, and allowance of £6 in lieu of stimulants.

UNBRIDGE WELLS GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, apartments, and attendance.

WALLASEY DISPENSARY AND VICTORIA CENTRAL HOSPITAL, Liscard.—House Surgeon, unmarried. Salary £100, with board and residence.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, Cavendish-square, W.—Honorary Dental Surgeon.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Honorary Officer in charge of the X Ray Department.

WEST NORFOLK AND LYNN HOSPITAL, King's Lynn.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

Births, Marriages, and Deaths.

BIRTHS.

HARRISON.—On April 5th, at 330, Humberstone-road, Leicester, the wife of L. K. Harrison, M.B. Cantab., of a son.

HOLDEN.—On April 8th, at Castle-hill, Reading, the wife of George Herbert Rose Holden, M.A., M.D. Cantab., of a son.

POTTS.—On March 17th, at the Infirmary, Cambridge-road, Bethnal Green, the wife of W. J. Potts, M.D. Lond., of a daughter.

RANSOME.—On April 6th, at Bungay, Suffolk, the wife of Gilbert H. Ransome, M.R.C.S., L.R.C.P. Lond., of a daughter.

MARRIAGES.

COLLINSON—CLARKE.—On April 3rd, at St. Alkmund's church, Derby, by the Rev. A. E. Hunt, M.A. (vicar), assisted by the Rev. S. E. Collinson (the bridegroom's brother), Frederick William Collinson, M.D., of Preston, to Clara, daughter of the late Thomas Clarke, of Derby.

HENRY—FARR.—On the 5th April, at Immanuel Church, Streatham-common, by the Rev. H. F. S. Adams, M.A., vicar, George Nicol Henry, M.B., fourth son of the late Andrew Henry, of Macduff, N.B., to Mary Louise, youngest daughter of the late Dr. George Frederick Farr, of Kennington and East Twickenham, and Mrs. Farr of Oakdale-road, Streatham.

ORMEROD—TYSSEN.—On April 8th, at St. Patrick's, Hove, by the Rev. Arthur Sutton, rector of Brant Broughton, Lincolnshire, cousin of the bride, assisted by the Ven. the Archdeacon of Lewes and the Rev. T. Rowland Hall, senior curate of the church, Ernest William Ormerod, M.D., elder son of the late Edward Latham Ormerod, M.D., F.R.S., to Janet Clara, eldest daughter of the Rev. Ridley Daniel-Tyssen, incumbent of St. Patrick, Hove.

PRIOR—MALLALIEU.—April 3rd, at Christ Church, Glodwick, Oldham, by the Rev. Howard Chadwick, M.A., James Prior, M.R.C.S., L.R.C.P., of Brookroyd, Heckmondwike, to Amy, younger daughter of the late William Mallalieu of Oldham.

RUTHERFORD—MITCHELL-WITHERS.—On April 10th, at St. Michael's, West Retford, by the Rev. Canon Gray, M.A., assisted by the Rev. C. V. Collier, F.S.A., Allen Freer Rutherford, M.B. Edin., second son of Dr. James Rutherford of Dumfries, N.B., to Beatrice, younger daughter of the late J. B. Mitchell-Withers, of Parkhead, Sheffield.

DEATHS.

CHILTON.—On April 2nd, at Bristol, Reginald Horace Chilton, M.R.C.S., L.R.C.P. Lond., aged 31 years.

FOX.—On April 2nd, at Brislington House, near Bristol, Bonville Bradley Fox, M.D. Oxon., aged 49 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

SYDENHAM AND THE OPEN-AIR TREATMENT OF PHTHISIS.

To the Editors of THE LANCET.

SIRS,—In the writings of Sydenham is a passage very like that quoted in THE LANCET of March 29th, p. 893, in allusion to Dr. Bodington's work. It is apparent from it that his advocacy can be claimed for the open-air treatment of phthisis. I transcribe from Pechey's translation of Sydenham's works published in 1740. He is proclaiming the advantage of horse-exercise in hepatic (?) disorder and proceeds:—

> "Nor is this kind of exercise more beneficial to hypochondriacal people than to those that are in a Consumption, whereof some of my relations have been cured by riding long journeys by my advice; for I knew I could not cure them better by medicine; of what value soever, or by any other method. Nor is this remedy proper only in small indispositions, accompanied with a frequent cough and leanness but also in Consumptions that are almost deplorable, when the looseness above mentioned accompanied the night-sweats, which are wont to be the forerunners of death in those that die of a Consumption. To be short, how deadly soever a Consumption is, and is said to be two-thirds dying of it who are spoiled by chronical diseases, yet I sincerely assert that Mercury in the French Pox, and the Jesuits' Bark in Agues, are not more effectual than the exercise above mentioned in Airing a Consumption, if the sick be careful and the sheets be well-aired and that the journeys are long enough. But this must be noted, that those who are past the flower of their age must use the exercise much longer than those that have not yet arrived to it; and this I have learned by long experience which scarce ever failed me. And though riding on horseback is chiefly beneficial to people that have a Consumption, yet riding in a coach is sometimes very beneficial."

Clearly the one thing common to riding and to driving is open-air exercise, while Sydenham's injunction "that the sick be careful and the sheets be well-aired" anticipates the regimen of the modern sanatorium.

I am, Sirs, yours faithfully,

Leek, April 3rd, 1902. DAVID A. ALEXANDER.

P.S.—Is the Government making any special provision for soldiers in South Africa who have contracted phthisis during the rigors of the campaign? He has a very poor chance of recovery who comes home after his discharge to the closer air of the houses of our reeking towns.

A WARNING.

To the Editors of THE LANCET.

SIRS,—I think it might save other medical men from being victimised if you were to issue a warning in THE LANCET against a man giving the name of Captain Davys who has succeeded in borrowing money from me and from the wife of another medical man in this neighbourhood. His story is that he wants the medical man on whom he is calling to attend his wife in her approaching confinement, that they are coming to an address quite close at hand on the following day, but that at present they are living in the country. He hopes the doctor will be able to call and see his wife the following afternoon as she is afraid of being upset by the journey. He himself has ridden up on his bicycle from where they are living in the country and (quite incidentally) he has come away without any money. It does not matter, of course, as he has his bicycle, but it is awkward not being able to get anything to eat as he knows no one in London. He has made this story profitable in at least two doctors' houses in Kensington and I hear that a very similar tale has been tried in other parts of London.

I am, Sirs, yours faithfully,

Kensington, April 7th, 1902. P.

REVOLVING SHELTERS.

To the Editors of THE LANCET.

SIRS,—I shall be obliged if any of your readers can give me the names and addresses of makers of revolving shelters constructed of wood and glass.

I am, Sirs, yours faithfully,

ROBERT MACKINLAY.

Ashbank, Newton Mearns, Renfrewshire, April 7th, 1902.

THE TREATMENT OF SMALL-POX.

A CORRESPONDENT, in view of the present prevalence of small-pox, forwards to us some interesting details of the methods of treatment found useful in the Sheffield epidemic of 1887–1888. Some 400 cases were treated at the patients' own homes. Diaphoretics were found to be contra-indicated after the second day and bromides were found useless to relieve the headache. On the other hand, a brisk saline purge was found of great use. With regard to the local treatment of the eruption the following plan gave good results: "Each pustule, not only on the face, but on the limbs and body also, was swabbed over with some antiseptic. At that time Little's phenyl was supplied by the local sanitary authority and this was used, but izal or carbolic oil would do equally as well. A large needle was then passed through each pustule and the pus evacuated. As many pustules as possible were thus dealt with on the eighth, ninth, and tenth days of the disease. The results in most cases were most satisfactory. Particularly in patients, and especially in young subjects, where many pustules occurred on the palmar and plantar surfaces of the hands and feet respectively, and where such symptoms as insomnia and great nervous prostration were prominent, I found the treatment give great relief and natural sleep usually followed, the general condition being also much improved." It was necessary to treat many cases of small-pox delirium. If two minims of croton oil were rubbed on the base of the patient's tongue very free purgation quickly followed, and within two hours the patient was found to be perfectly quiet.

A SANITARY POWDER-PUFF.

THE powder-puffs commonly used by hairdressers evidently present facilities for the transmission of skin affections and other contagious diseases from one customer to another on account of the readiness with which clippings of hair, loose epithelium, and other tonsorial débris adhere to their surfaces. A powder-puff can hardly be sterilised, but an easy and satisfactory way of avoiding all risk is to use a new one each time. The Odourless, Retentive Disinfecting Cloth Company, of 96, Leadenhall-street, London, E.C., supplies an article very suitable for this purpose, consisting of a disc of stiff coloured paper about two inches in diameter, faced on one side with a thin layer of cotton-wool. We understand that the price of these sanitary powder-puffs is so small that on financial grounds a barber can have no inducement to use them over and over again. By this precaution, together with those described in THE LANCET of April 5th, p. 983, the risk of contagion in hairdressers' shops will be reduced to a minimum.

PROPOSED MEMORIAL TO THE LATE SURGEON-GENERAL W. NASH, A.M.S.

THE following subscriptions have been received since the last notification:—

	£	s.	d.
Major R. H. Clement, R.A.M.C.	0	5	0
Major H. S. Peeke, R.A.M.C.	0	5	0
Lieutenant-Colonel H. K. Aliport, R.A.M.C.	0	10	0
Colonel A. W. Duke, R.A.M.C.	0	10	0
Lieutenant-Colonel W. T. Martin, A.M.S. (retired)	0	10	
Previously acknowledged in THE LANCET	34	16	0
Total	36	16	6

THE DUPLEX ROTARY BOTTLE AND DECANTER WASHER.

MESSRS. G. RESTALL AND CO., of 57, Park-road, Regent's Park, London, N.W., have submitted to us an ingenious and simple device for the cleaning of bottles, decanters, &c. It consists practically of a screw drill attached at its top end to a shelf by means of a spring. The drill rotates rapidly by merely grasping a bobbin with a thread corresponding to that of the drill and moving it rapidly up and down. It is the principle of the Archimedean screw but reversed. In the place of a drill bit the brush is fixed, or a double hoop of stout wire when the effect of a whisk is required. The apparatus works well and very effectively removes the dirt in bottles or flasks of whatever shape they may be. It is particularly well adapted, we have found, for cleaning bottles which have contained milk. A clean milk bottle is, of course, of the greatest importance, but it is not easy thoroughly to cleanse a narrow-necked bottle, such as that in which milk is sterilised and which contains adherent and stale milk sediments. The apparatus may be applied to a variety of purposes and can claim to be in the strictest sense a real sanitary accessory.

RADCLIFFE *v.* PRICE.

To the Editors of THE LANCET.

SIRS,—I read with much interest your leading article in THE LANCET of March 29th, p. 902, on Radcliffe *v.* Price, and I quite agree with your views as to the matter of costs in the case. I think the decision on this point, at least, is a very unjust one, and I trust steps will be taken to set it aside. I wonder what Mr. Justice Swinfen Eady would say to members of his own profession who very cleverly got themselves inserted in wills as "residuary legatees." They have plenty of time to wind up the estate and it is some time before their share can be estimated, and then, for various and obvious reasons, it is hardly likely that any inquiry will be instituted. I know a case where something like £20,000 were obtained in this way by a respectable solicitor and where there was no other connexion than that as between lawyer and client.

I am, Sirs, yours faithfully,

AN OLD SUBSCRIBER (of nearly 40 years' standing).

April 1st, 1902.

SADDLE SORENESS.—VARICOSE VEINS.

To the Editors of THE LANCET.

SIRS,—A warm, comfortable, well-fitting, perforated saddle-cloth made of thick felt is a great addition to a suitable cycle saddle, such as Brook's saddles generally are, and tends to prevent saddle soreness, which I have also found, I thought, further prevented, if going for a long ride, say 50 miles, by wearing ordinary bathing drawers which proved no inconvenience and were worn with great comfort when going to Oxford on my cycle with my son last October. I was led to wear the drawers owing to being somewhat corpulent (I measure in girth, measuring round the umbilicus, 42½ inches) and I found the drawers, which reached well up to the navel, a great support to the abdominal muscles and certainly they prevented the flatulency and

dyspepsia that a long ride is apt to produce. I rode the whole distance, stopping at Winchester on the first night, with ease, and also rode most of the return journey on my cycle (after staying three days enjoying the sights of the classical city) with great comfort and no saddle soreness. It occurred to me that the information might be useful to your readers.

You have, Sirs, in a leading article on March 22nd, p. 833, usefully directed attention to varicose veins and Mr. Pearce Gould's excellent and comprehensive lecture. I think many of your readers who are cyclists, and who are often asked if a youth who suffers from varices may ride, may perhaps, be glad to know that I have found cycling most beneficial for varicose veins, from which I have suffered all my adult life, and sometimes severely, having had three attacks of phlebitis in my left leg, the first after a long row from Hammersmith to Kingston in 1865. Previously to my marriage in 1866 I consulted Mr. T. W. Nunn, then surgeon to the Middlesex Hospital, as to whether he would advise Mr. Lee's operation for me, at that time the operation not being as successful as it is now. After careful examination, Mr. Nunn did not advise operative treatment but suggested that I should wear elastic stockings which for many years I generally did, especially on the left leg, and I had no further inconvenience from them until after a serious illness with very high temperature in 1882, sometimes 105° F. (not rheumatic). My temperature very easily goes up. I have more than once gone about seeing my patients with a temperature of 103°. I remember once calling my eldest son's attention, then a medical student, to this rather interesting fact when we were in Antwerp and were going before breakfast to the swimming baths—"Now, look here, my temperature is now 103° (verified by thermometer). You will find after my swim (the water was very cold) it will go down to 98° or 99°"; and so it did, and did not rise as high again. I was not feeling well, of course, although no one would for a moment have thought I had a temperature of 102° or 103°, but after each morning swim it was lower and within a week remained normal. I had a third attack of phlebitis in 1896 and suffered a great deal of pain, especially in going down to Hastings, but this time the inflammation subsided by sea air, rest, and iodide of lead and opium lotion without forming abscesses, and on recovery from illness the veins were *in statu quo ante*. After my residence here I did not keep carriages and learnt to cycle, using my machine like a hack and deriving more pleasure and health from its perpetual and daily use when fine than I did from my horses and I have now no varicose veins, at least no nodes—merely slight dilatation of the superficial veins of the left leg. Cycling has cured them. I am, Sirs, yours faithfully,

FREDK. H. ALDERSON, M.D. St. And.

West Bournemouth, April 5th, 1902.

INCONTINENCE OF URINE.

To the Editors of THE LANCET.

SIRS,—Your correspondent "S. S. B." will find the following useful: sodii benzoas, 10 grains; sodii bicarb., 10 grains; tr. hyoscyami, 30 minims; barley water to one ounce, to be taken every night two hours before going to bed. I am, Sirs, yours faithfully,

Windsor, April 5th, 1902. W. B. HOLDERNESS.

To the Editors of THE LANCET.

SIRS,—The following extract from my note-book, copied from a medical paper about 13 years ago, has given excellent results: "M. Perrett recommends giving to children from five to eight years of age one to two grammes of antipyrin every evening—one part taken at 7 and the other at 9 o'clock. Treatment continued eight days, then a week's respite, and again administered. Two weeks of treatment is generally sufficient for a case." I may add that in my experience the older the boy the more successful the result.

I am, Sirs, yours faithfully,

Batley, Yorks, April 4th, 1902. JOHN H. WOODS, L.R.C.P. Irel.

To the Editors of THE LANCET.

SIRS,—I believe that in many cases of boys who wet the bed the habit is due to masturbation, and this should be carefully looked for. It is also advisable that the amount of liquid taken in the evening should be restricted as much as possible.

I am, Sirs, yours faithfully,

April 9th, 1902. G. F. B.

THE ANTI-VACCINATIONIST IN HIS TRUE COLOURS.

WE have received a most interesting communication from a gentleman named W. D. Stokes, who lives at 14, Waterloo-place, Brighton. Mr. Stokes is of opinion that the "vast majority of the community are unconverted and are yet sceptical as to the efficacy of the operation of vaccination to prevent, or even to mitigate, an attack of small-pox." Mr. Stokes is good enough to forward us a "bill" which he hopes "may be of some service in enlightening you touching the subject in question." We must allow that Mr. Stokes's bill has given us some information of which we were quite ignorant. Here are some of the things he tells us. "It is the opinion of honest physicians that vaccination is causing the death of 100,000 people in the United Kingdom every year." "As the late Royal Commission did not give to the Government a true statement respecting the effects of vaccination, some honest doctors say that the great majority of the members of the Royal Commission deserve penal servitude for the remainder of their lives, for they have been the means of keeping up the wholesale murderous practice." "We have the testimony of 232 medical men that vaccination has within their own experience caused 55 different diseases ..... including internal diseases, ulcerated stomach, liver disease, consumption, cancer ....., inflammation, paralysis, ricketts (*sic*), scarlatina, leprosy, and many other diseases. ....." Mr. Stokes has the courage of his opinions, such as they are. Like the public-house orator we are not going to argue with him, we are going to tell him, and we will do so in his own words: "All such dishonest, untruthful, deceitful, wicked people (doing differently from that which they would be done by) will find themselves at the left hand of God in the Great Judgment Day and will then receive their just reward." So much, then, for the circular forwarded to us by Mr. Stokes himself. It appears that he is also distributing circulars to the public, and a correspondent has sent us one of these. In it Mr. Stokes makes the following statement: "A great many are losing their arm by amputation soon after being vaccinated, in many such cases the employers having to allow a pension for life." We have no hesitation in saying that this statement is, to put it politely, not true.

THE "WILLIAM MARTINDALE MEMORIAL."

AT a meeting of the former colleagues and friends of the late Mr. William Martindale, held at the Pharmaceutical Society on March 4th last, the following resolution was passed:—

> "With the view of perpetuating the memory of the late Mr. William Martindale, a past president of this society, it is desirable that steps be taken to procure a bust of our late deceased friend, to be placed in the house of this society, and in the event of the response being satisfactory, a medal or some other encouragement for the advancement of pharmacy be also provided, the exact nature of which shall be determined at a subsequent meeting of subscribers."

Subscriptions of any amount not exceeding two guineas are invited by the committee and should be addressed to the honorary secretary, Mr. G. S. Taylor, at 17, Bloomsbury-square, London, W.C. Postal orders and cheques should be made payable to the treasurer, Mr. Michael Carteighe, 180, New Bond-street, W., and crossed London and Westminster Bank, Westminster Branch.

M. D.—The firm can have no monopoly of the appointment. If the post is publicly declared vacant any local medical man can apply for it. But it is not necessarily kind or wise to do a thing even when it is permissible. It would be better if the intending candidate consulted a prominent medical man in the locality.

Liverpool.—This was the subject of an address delivered at a meeting of the Wimbledon Medical Society on Nov. 8th, 1901. It was published in the *Clinical Journal* of Jan. 8th, 1902, and will reappear with Dr. Poore's Milroy Lectures shortly to be issued by Messrs. Longman.

C. J.—We think that the attention of the well-known medical man in question should be called to the fact that his name is being used to advertise diabetic beverages. But it is not necessary to do this publicly as there is no evidence that he is aware of the fact.

J. K.—We do not endorse our correspondent's view as to the limited knowledge of her particular condition exhibited by the medical profession. We recommend her to consult her medical attendant as to the scientific literature that she reads.

Subscriber.—We fear that our correspondent will have great difficulty in finding any appointment for which his previous experiences have fitted him. If he will more fully define his wants to us in a private letter we will endeavour to aid him.

Justice.—We shall have pleasure in replying in full if our correspondent will send us all the papers that he has with reference to the club—annual reports, balance-sheets, rules for admission of members, &c.

Senex, in writing on "Incontinence of Urine," has omitted to furnish us with his name and address.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 10th, 1902.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain-fall.	Solar Radia. in Vacuo.	Maximum Temp. Shade.	Min Temp	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
April 4	29·96	W.	0·03	98	54	36	40	44	Fine
,, 5	29·87	S.W	0·01	72	52	42	44	45	Raining
,, 6	29·89	N.W.	0·06	82	45	41	39	41	Cloudy
,, 7	30·31	N.E.	0·04	62	47	39	39	42	Overcast
,, 8	30·23	S.	...	56	45	40	38	41	Overcast
,, 9	30·10	E.	...	96	50	38	39	42	Overcast
,, 10	30·08	E.	...	63	48	39	39	41	Overcast

During the week marked copies of the following newspapers have been received:—*Dublin Evening Telegraph, Southampton Echo, Islington Gazette, Belfast News, Birmingham Daily Mail, Lancaster Guardian, Bradford Observer, Sheffield Daily Telegraph, Municipal Reformer, Echo, Daily Mail, Daily Express, Yorkshire Post, Standard, Bristol Mercury, Windsor and Eton Express,*

Reading Mercury, La Caduceo, Hong-Kong Weekly Press, Herts Advertiser, Times of India, Aberdeen Free Press, Blackburn Gazette, Bournemouth Guardian, Lancashire Post, Plymouth Morning News, Western Mercury, Yorkshire Post, Pioneer Mail, Citizen, Architect, Builder, Devon and Exeter Express, Burnley Express, Manchester Dispatch, Glasgow Citizen, Scotsman, Ipswich Times, &c., &c.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (14th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.) West London (2.30 P.M.), London Throat (2 P.M.).

TUESDAY (15th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M. and 6 P.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.).

WEDNESDAY (16th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.).

THURSDAY (17th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.).

FRIDAY (18th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M. and 6 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square, (9.30 A.M.), City Orthopædic (2.30 P.M.).

SATURDAY (19th).—Royal Free (9 A.M. and 2 P.M.), London (2 P.M.) Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing-cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), London Throat (2 P.M.), Throat, Golden-square (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (14th).—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M. Clinical Evening. Dr. P. Weber: The Infantile Form of Rheumatism associated with Chronic Changes of Spleen, Liver, and Lymph Glands.—Dr. W. Ewart: Case of Chronic Nephritis illustrating the Treatment by Drainage and Feeding.—Mr. B. Dawson: (1) Fibrosis of Lung probably Syphilitic; (2) Aortic Incompetence with marked Diastolic Thrill; (3) Tubercular Disease of Lung and Knee-joint in conjunction with Albuminuria and Paralysis of Left Sixth and Seventh Cranial Nerves; (4) Hypertrophic Osteo-arthropathy.—Dr. StClair Thomson and Mr. A. Carless: Epithelioma of Epiglottis and Back of Tongue. Removal by Transhyoid Pharyngotomy.—Dr. H. D. Rolleston: Pigmentation (blue line) of the Lip.—Dr. StClair Thomson: Ulceration of the Left Ala Nasi probably Syphilitic but unchecked by treatment.

OTOLOGICAL SOCIETY OF THE UNITED KINGDOM (11, Chandos-street, Cavendish-square, W.).—4.30 P.M. Report by Mr. A. H. Cheatle on the Examination of the Ears of 1000 School Children will be presented and discussed. Members of the profession on presentation of their cards will be welcomed to take part in the debate.

TUESDAY (15th).—PHARMACEUTICAL SOCIETY OF GREAT BRITAIN (17, Bloomsbury-square, W.C.).—8 P.M. Paper:—Dr. A. Henry: Chinese Drugs.

PATHOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M. Council Meeting. 8.30 P.M. Bacteriological Section. Mr. A. G. R. Foulerton: A Case of Tuberculosis in a Sheep.—Mr. H. J. Waring: A New Method of Separation of the Toxin of Tetanus from the Solid Viscera of the Human Body.—Dr. F. W. Andrewes: The Recognition of Tetanus after Death by the Isolation of the Toxin from the Viscera.—Dr. J. W. Washbourn and Dr. J. W. H. Eyre: The Pathogenic Actions of Strains of Pneumococcus Isolated from Various Sources.—Mr. N. B. Harman: Further Contribution to the Bacteriology of the Veld Sore.

WEDNESDAY (16th).—BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M. Adjourned Discussion on Chronic Affections of the Kidney and Morbid Conditions of the Urine arising therefrom, in relation to Balneological, Climatic and Dietetic Treatment (re-opened by Dr. L. Williams). (A report of the discussion will be found in THE LANCET of April 5th.) Dr. S. Thompson, Mr. W. B. Davies (Llandrindod), Dr. A. Morison, Dr. B. Thorne, Dr. M. Dockrell, Dr. Bagshawe (St. Leonards), Dr. Bain (Harrogate), Dr. Aubrey (Weston-super-Mare), Mr. A. H. Dodd (Brighton), Dr. Felkin, Dr. Inglis (Hastings), Mr. C. H. C. Cosens (Paignton), Dr. L. Wainwright (Folkestone), Dr. Snow (Bournemouth) and others are expected to take part in the discussion.

FRIDAY (18th).—EPIDEMIOLOGICAL SOCIETY (11, Chandos-street, Cavendish-square, W.).—8 P.M. Council Meeting. 8.30 P.M. Meeting.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN (11, Chandos-st., W.).—Cases will be shown by Dr. E. Cautley, Mr. S. Stephenson Dr. D. McKenzie. Specimens will be shown by Dr. J. H. T. Walker. Papers:—Mr. R. H. A. Whitelocke (Oxford): Notes on a Case of Double Inguinal Hernia in a Female Child, each Sac containing an Ova-like Organ.—Dr. G. Carpenter: A Case of Malignant Endocarditis which developed Optic Papillitis, Sub-retinal Hæmorrhages, a Simulated Choroidal Tubercle, and other Changes in the Fundus Oculi.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (14th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. T. C. Fox: Clinique. (Skin.)

TUESDAY (15th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. W. Ewart: Clinique. (Medical.)

ROYAL INSTITUTION OF GREAT BRITAIN.—3 P.M. Dr. A. Macfadyen: Recent Methods and Results in Biological Inquiry.

WEDNESDAY (16th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. H. Marsh: Clinique. (Surgical.)

THURSDAY (17th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.)

ROYAL INSTITUTION OF GREAT BRITAIN.—3 P.M. Prof. Dewar: The Oxygen Group of Elements.

FRIDAY (18th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. N. MacLehose: Clinique. (Eye.)

ROYAL INSTITUTION OF GREAT BRITAIN.—9 P.M. Sir John H. A. Macdonald: The Autocar.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

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Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Mr. G. Anderson, Frankfurt-a-M.; Dr. H. B. Allen, Melbourne; A. K.; Anderson's College Medical School, Glasgow, Secretary of; Dr. D. A. Alexander, Leek; Dr. F. H. Alderson, Bournemouth; Dr. Henry Ashby, Didsbury.

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